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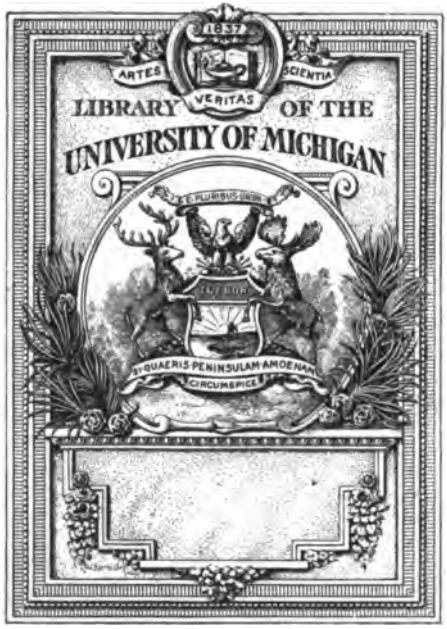
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REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

VOL. XXXVIII.

Nos. 136, 137, 138, and 139.

MONTHS: JANUARY, FEBRUARY, MARCH, AND APRIL, 1892.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

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REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 136.—JANUARY, 1892.

ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE.
ALL REQUESTS FOR THESE REPORTS SHOULD BE ADDRESSED TO THE SECRETARY OF STATE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 136.—JANUARY, 1892.

NAVIGATION FROM PARIS TO THE SEA.

REPORT BY CONSUL WILLIAMS, OF ROUEN.

The consent of the Government has been asked for a project connecting Paris with the sea by a canal, following the bed of the Seine for nearly the entire distance, for the passage of vessels drawing 6.5 meters of water. Havre and Rouen naturally oppose the measure. A company known as the Company of Paris Seaport (Société de Paris Port-de-Mer) has made the offer of completing the work at an estimated cost of 135,000,000 francs, without the aid of the Government. These figures are considered by the chamber of commerce of Rouen as under cost, which they affirm would not be less than 250,000,000 francs.

The practicability of such a project is undoubted. In regard to the advantages to Paris and the profits to shareholders, there is a great diversity of opinion. The principal objection to the scheme appears to me to have been overlooked by the projectors, viz, a limit of the draft of water, which would prevent large-sized vessels from ascending the river. The increase of the tonnage of vessels arriving at this port is remarkable. Such a scheme should be under Government control, and sooner or later such would be the result. The details of the project are interesting, as well as the discussions to which it gives rise, but it would be too much of a digression in this report. I consider that the scheme will be held for a long time in abeyance.

Notwithstanding all that has been written upon the navigation of the lower Seine, a very confused idea exists in regard to its condition. Mr. Dormoy, chief superintendent for pilotage of the Seine, at Havre, has given some very important details which throw new light upon the subject, and from which I freely copy.

From the sea up to Rouen the length of the Seine is about 120 kilometers, of which 17 kilometers are in the estuary and 103 kilometers in the embanked part of the river. Just outside the embankments the bed of the river at high water, which is called the "major" bed, is 700 meters wide; the bed at low water is called the "minor" bed. At Tancarville, where the navigation of the barge traffic through the canal to Havre ends, the width is only 475 meters, and it diminishes on the way up to Rouen until it comes to 150 meters. At some places, as at Caumont, for example, there are some narrow places on account of unevenness.

The bottom of the stream along these 120 kilometers is a winding line, sometimes under and sometimes over the horizontal. The concavities are places where vessels can anchor without any danger of stranding at low water; the convexities are like thresholds, the elevation of which limits the draft of water for navigation. The depth in the channel, at lowest tides, along the embanked length of 103 kilometers is not less than 3 meters, and that depth keeps increasing up to Rouen; not that the up banks are lower than the down ones, but because the tide gradually ebbs less, that is to say, the geometrical lines at low water in the maritime Seine are inclined towards the sea.

In the estuary the water generally flows out of a wide opening; there are no depths, and, moreover, the channel is less embanked. It therefore results that at spring tides, when the water recedes a great deal from the bay, the river is cast on shallow water. The extension of the embankments would, by narrowing the passage of the ebb, certainly remedy the present state of affairs.

It may be said that at high water the same level is attained successively everywhere between Havre and Rouen. The geometrical lines at high water are therefore obviously horizontal, although that affirmation appears contradicted by a fact explained as follows: In the actual condition of the bed of the river and tides at high water the navigation requires a minimum of depth varying from 5.2 meters at very low neap tide to 7.6 meters at the highest spring tide, the Seine not having any exceptional floods. The propagation of the high water is such that a vessel can, to a certain extent, follow the undulation, and so be benefited all along the way by the greatest depth given by the tide. That fortuitous concordance of the quickness of the flood and of the vessel is very advantageous to the port of Rouen, which is so situated as to be benefited to the highest degree by the great road leading to it.

This road is nevertheless open to improvement. The hydraulic power of tidal rivers is sufficiently known at the present day to allow of certain works being undertaken without any miscalculations. Considering the results they would offer, they are comparatively of a small cost, for the water, by being properly conducted by these works, would do all the labor itself. It is by these means that the whole bed of the Seine could be altered to meet the requirements of navigation, even modifying the tides, not in their semidiurnal periodicity, but in their local manifestation, in view of raising of

levels and of the attenuation, if not the suppression, of the untoward particularities they actually offer. It is therefore duly understood that the figures inserted in this report and certain particulars given in it refer only to the present state of the Seine, and are subject to invalidation by the improvements that will follow.

It is hardly necessary to say that the tide is propagated into the river by going upwards. In consequence of the rush of the waters towards the river, there is high water in the channel of the estuary sooner at Havre, even though low water is later. From this results a quick rising towards the open sea, and it is all the more rapid because the waters have not so much lateral expansion as they advance.

At Havre, during spring tides, the sea marls about 7.5 meters, and at Rouen a little over 2 meters, which figures are to be reduced by half for the lowest neap tide. At intermediate points the marling is proportionate to the distance at extreme points. If it were not for the Marlot lock, which stops the maritime régime of the river, the spring tides would be felt as far as 180 kilometers away from the sea. It is that enormous introduction of water which creates the violent current in the lower parts, and, more particularly, the long slack water in the estuary at high water, which lasts 2 hours and 15 minutes, and which is so favorable to the port of Havre. As the water has to pass profusely, the consequence is that a full level is maintained for a long time at the entrance. It is even conceived that ports more distant than Havre and Honfleur also feel their proximity to the Seine. This is one of the benefits derived from the embankments; it is, consequently, of a recent date.

Impeded by the narrowing, the waters accumulate before the entrance of the embankments, standing as a reserve, which also follows in, but later. In the further end of the estuary it produces an early high water and a raised level, being compared to the high-water level at Havre. However, the decline is rapid as the reserve diminishes, and when the obstacle has disappeared a second flow completes the filling up of the river.

The time occupied from low water to real high water goes slightly diminishing according to the distance. For a tide of 80 decimeters, it takes 4 hours and 20 minutes at Havre and 3 hours and 55 minutes at Rouen; for a tide of 60 decimeters, it takes 5 hours and 45 minutes at Havre and 4 hours and 50 minutes at Rouen. There is no difficulty in making the calculation for intermediate tides, as well as for any place along the river. The time occupied from high to low water is the reverse, the two periods together averaging 12 hours and 25 minutes. The difference between the time occupied by the withdrawing of the waters and the half of 12 hours and 25 minutes represents a sort of local coefficient, of which the debit of the river is the essential factor. It is conceived that this coefficient must increase during the floods.

As a result of the draw of the river the rise of the water is especially quick at the beginning. During spring tides, and sometimes at ordinary

tides, that draw is so strong that it creates a phenomenon known by the name of *mascaret*, or bar, this being all the more violent where the filling up of the river creates an impediment. The coefficient of the tide, a winding channel in the estuary, uneven beds that counteract the passage of the water, and a strong breeze against the stream aid in the formation of the *mascaret*. Should one of these causes disappear, the phenomenon would be that much reduced, and if there were none it would amount to nothing. At present it is hardly noticeable, even in strong spring tides, on account of the way being now almost straight downwards and the river banks being well settled. Some two and one-half years ago it was very different, as the bar was laying waste the river banks. The undulation of the *mascaret*, which is double and often triple, attains a height of 2.5 meters, and spreads with a speed averaging 26 kilometers per hour, arriving at each locality soon after the time of its low water. Its approach is felt by a slight swell. At the place reached the river shows two levels that differ approximately according to the height of the bar. The ebb waters are forced back upwards, and help to give to the river its high-water marling, particularly where the locality is further away from the entrance.

At Caudebec there is no saltness, consequently all the marling from there up to Rouen arises from the water having been forced back. In weak tides the saltness is hardly noticeable at Quillebœuf at high water. Thus the level below Caudebec is obtained by the mixture of the sea and river waters, variable in proportion for the same point from one tide to the other, salt water dominating more and more towards the sea.

The *mascaret* marks its passage by a very great agitation, which is at its height near Villequier; then it decreases higher up until it disappears altogether. It is harmless at Rouen. It is heard at some distance. The rumbling waves that follow it, and which must be attributed to the meeting with the ebb, which is driven back, are called *eteules*. This phenomenon has attracted much attention, and is one of the strangest sights I have ever witnessed. I have never seen any photographs of it, but, at the instance of Harvard College, I am endeavoring to make arrangements which will procure them.

In the navigation of the lower Seine a vessel of ordinary speed, making from 8 to 9 knots, finds almost everywhere sufficient depth to go up to Rouen in one tide only. The hours of the tidal currents are almost as regular as the hours of the tides. The river bed hardly changes at the entrance, and still less up to Rouen. It is alternately sand, big or small stones, gravel, and compact mud. The sand dominates in the vicinity of the sea.

The navigation of the Seine is open at night. It is lighted by lights placed on the shores in such a way that it suffices to keep within their line, and to go from one to the other by keeping the light passed exactly in the rear and making for the next one by keeping it straight in front. These lights are numerous, and are red on the left shore and white on the right.

Rouen now possesses very roomy quays, along which large vessels are always afloat at low water, extensive bonded docks and warehouses, sheds,

powerful hydraulic and steam cranes, a repairing slip, a petroleum dock, etc.; and the numerous railways in direct connection with the quays, the upper Seine, and canals (arteries of the interior craft) make it a most commodious port for the transit of heavy goods.

The above well-known facts have so favorably impressed foreign navigators that they are eager to obtain freights for Rouen and establish regular lines of transportation to and from this port. If American navigators have a desire to avail themselves of the profitable transportation of grain and petroleum from the United States, which ordinarily is large, and this year promises to be unusually so, they need not be deterred by the reports of interested parties from participating in the advantages of this trade.

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, August, 1891.

CRUDE AND REFINED PETROLEUM IN MEXICO.

REPORT BY CONSUL SAMPSON, OF PASO DEL NORTE.

The following facts in regard to crude petroleum and coal oil will be of special interest, particularly in view of the report, which seems to receive general credit, that the Mexican Government is about to amend its tariff laws so as to provide that anything manufactured in the zona libre shall enter the Republic free of duty, but that duties will continue to be collected on all articles manufactured outside the Republic as heretofore, with the addition that, after November 1, 1891, there will be imposed a duty of 10 per cent, instead of 3 per cent as heretofore, on all importations into the zona libre.

At present there is only a light duty on crude petroleum, but on coal oil there is a heavy one. As a result, there is a large refinery in the city of Mexico to which the crude petroleum is shipped from the United States for refining and then sold in the markets of Mexico. During the fiscal year 1890–'91 there has been shipped from this refinery, through this city under manifests, to Nogales and other points, to be returned into Mexico, about $138,132 worth of coal oil. This had to pay a railroad freight for over 1,200 miles before reaching this city, and the crude petroleum for the same distance before reaching the city of Mexico. During the time specified there were shipped through this city to the city of Mexico 260 cars of crude petroleum, or nearly 1,000,000 gallons, on which the freight was $44.21 per 1,000 kilograms, or about $500 per car, making the freight charges on the crude petroleum during the time specified about $130,000. This is only the freight one way. All that is returned as refined oil pays the return freight over 1,200 miles. If the change is made so as to let all of the products of the zona libre enter free, the refined oil could be produced in this city and save the freight charges indicated.

Interesting facts could be presented showing the rapid advances made in the prices of stoves, clocks, furniture, etc.—articles of American manufacture—after they cross the Rio Grande and start on their journey inland, in some cases being so great as to prevent their ever getting beyond the zona libre.

A. J. SAMPSON,
Consul.

UNITED STATES CONSULATE,
Paso del Norte, September 12, 1891.

COMMERCE AND INDUSTRIES OF BARBADOS.

REPORT BY CONSUL DIMMICK.

During the year 1890 Barbados was prosperous. The crops were the largest ever raised in the colony and the prices fair. The greater portion of the exports went to the United States, from whence came nearly one-half of the imports.

NAVIGATION.

In navigation the United States takes second place, and the inclosed table of American vessels entered and cleared shows a very small number of American steamers; but this by no means represents the total number of American steamers that have called at this port during 1890, as the vessels of the United States and Brazil line seldom entered at the custom-house here, and never at the United States consulate, and thus no record of them is kept. The number of American sailing vessels which entered at the custom-house was ninety-two, but there were many others which simply called for orders and entered only informally; of these no notice is taken. Many of them fail to enter at this consulate unless they need a service rendered.

Table showing the arrivals and departures of vessels from all countries at ports in Barbados in 1889 and 1890.

ENTERED.

Year.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
1889	330	438,543	1,067	173,200	1,397	611,743
1890	357	458,755	1,103	161,428	1,460	620,183
Increase					63	8,440

CLEARED.

1889	324	434,752	1,050	171,233	1,374	605,985
1890	360	463,384	1,109	162,695	1,469	626,079
Increase					95	20,094

Table showing the arrivals and departures of American vessels at ports in Barbados in 1889 and 1890.

ENTERED.

Year.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
1889	6	12,054	123	44,243	129	56,297
1890	7	10,826	92	29,130	99	39,956
Decrease					30	16,341

CLEARED.

1889	6	12,054	116	42,263	122	54,317
1890	7	10,826	92	29,130	99	39,956
Decrease					23	14,361

Table showing the number, tonnage, and crews of sailing vessels entered and cleared according to flag at ports in Barbados in 1890.

ENTERED.

Flag.	With cargo.			In ballast.			Total.		
	No.	Tons.	Crews.	No.	Tons.	Crews.	No.	Tons.	Crews.
British	800	56,709	5,163	88	34,037	802	888	90,746	5,965
American	82	24,407	665	10	4,723	77	92	29,130	742
French	13	2,680	107				13	2,680	107
Norwegian	28	11,617	278	28	13,618	271	56	25,235	549
Swedish	3	1,367	30	3	1,090	26	6	2,457	56
Dutch	22	1,619	147	1	36	6	23	1,655	153
Venezuelan	12	1,334	101				12	1,334	101
Austrian	2	529	17	1	839	4	3	1,368	31
Danish	1	1,189	10				1	1,189	10
German	3	1,378	32				3	1,378	32
Portuguese	1	370	14				1	370	14
Italian				4	2,866	50	4	2,866	50
Russian				1	1,020	19	1	1,020	19
Total	967	103,199	6,564	136	58,229	1,265	1,103	161,428	7,829

CLEARED.

British	793	75,593	5,602	100	15,235	731	893	90,828	6,333
American	62	18,927	522	30	10,393	256	92	29,320	778
French	7	272	40	6	2,408	69	13	2,680	109
Norwegian	33	15,511	318	25	10,266	231	58	25,777	549
Swedish	2	800	18	4	1,657	38	6	2,457	56
Dutch	21	1,263	138	1	356	9	22	1,619	147
Venezuelan	6	768	55	5	504	41	11	1,272	96
Austrian	1	839	14	2	529	18	3	1,368	32
Danish	1	1,189	25				1	1,189	25
German				2	860	21	2	860	21
Portuguese				1	370	14	1	370	14
Italian	3	2,075	37	2	1,333	25	5	3,408	62
Russian	2	1,547	29				2	1,547	29
Total	931	118,784	6,798	178	43,911	1,453	1,109	162,695	8,251

Table showing the number, tonnage, and crews of steamers entered and cleared according to flag at ports in Barbados in 1890.

ENTERED.

Flag.	With cargo.			In ballast.			Total.		
	No.	Tons.	Crews.	No.	Tons.	Crews.	No.	Tons.	Crews.
British	313	405,333	14,942	31	36,782	1,371	344	442,115	16,313
American	4	5,514	171	3	5,312	244	7	10,826	415
German	4	4,284	93	1	1,043	43	5	5,327	136
Norwegian	1	487	15	.....	.....	.....	1	487	15
Total	322	415,618	1,522	35	43,137	1,658	357	458,755	16,879

CLEARED.

British	320	411,918	14,925	27	34,826	1,321	347	446,744	16,246
American	5	7,720	321	2	3,106	94	7	10,826	415
German	5	5,327	124	.....	.....	.....	5	5,327	124
Norwegian	.....	.....	.....	1	487	15	1	487	15
Total	330	424,965	15,370	30	38,419	1,430	360	463,384	16,800

GENERAL COMMERCE.

Table showing the commerce of Barbados in 1889 and 1890.

Year.	Total.		With the United States.	
	Imports.	Exports.	Imports.	Exports.
1889	$5,814,576.02	$4,942,024.28	$1,882,293.48	$2,903,568.00
1890	5,729,873.58	5,781,071.20	2,047,024.10	3,580,347.42
Increase	.....	839,046.92	164,730.62	676,779.42
Decrease	84,702.44	.....	.....	.....

Table showing a comparison between the amount of imports from the United States and the countries from which the largest amount of said articles is imported.

Articles.	Countries.	Value.
Arrowroot	United States	$692.80
	British West Indies	30,585.00
Blacking	United States	3.76
	Great Britain	1,249.86
Books, printed	United States	2,517.66
	Great Britain	18,166.60
Bran and pollard	United States	5,482.52
	Great Britain	6,079.32
Bread	United States	90,503.76
	Great Britain	1,624.94
Bricks	United States	1.02
	Great Britain	7,214.74
Butter and compounds	United States	132,437.34
	Great Britain	447,377.66
Candles	United States	5,010.80
	Great Britain	424.60

Table showing a comparison between the amount of imports, etc.—Continued.

Articles.	Countries.	Value.
Carriages	United States	$14,751.06
	Great Britain	2,912.88
Cheese	United States	10,736.40
	Great Britain	1,453.24
Clocks and watches	United States	1,182.84
	Great Britain	2,501.18
Coal	United States	480.00
	Great Britain	65,820.96
Cordage	United States	21,686.88
	Great Britain	10,309.10
Corn	United States	153,191.84
	Great Britain	16,469.90
Corn meal	United States	161,214.90
	British West Indies	1,580.00
Fish:		
Dried	United States	29,040.54
	British North America	221,464.00
Pickled	United States	1,893.60
	British North America	180,525.28
Flour	United States	427,098.00
	British Guiana	5,055.50
Furniture	United States	2,794.16
	Great Britain	15,520.30
Glass	United States	1,927.00
	Great Britain	25,745.25
Groceries	United States	30,259.45
	Great Britain	60,852.05
Hardware	United States	15,462.55
	Great Britain	200,476.53
Lard	United States	45,870.20
	British North America	100,075.40
Machinery	United States	35,013.50
	Great Britain	145,227.20
Oats	United States	60,305.84
	British North America	16,469.90
Oil, kerosene	United States	60,332.60
Oil meal	do	151,537.45
	Great Britain	94.05
Sugar, refined	United States	5,704.60
	Great Britain	558.92
Tobacco:		
Leaf	United States	5,277.55
	Great Britain	1,020.20
Manufactured	United States	30,168.20
	Great Britain	1,012.35

Table showing the value of exports from Barbados to the United States during 1890.

Articles.	Value.	Articles.	Value.
Aloes	$161.54	Miscellaneous	$129.65
Cocoa	129.69	Returned packages	326.50
Ginger	64.54	Sugar	3,462,478.04
Hides	271.60	Tar oil	952.05
Iron	90.00	Tamarinds	85.46
Molasses	114,765.49		

Table showing the exports and imports of Barbados since 1885.

Year.	Exports.	Imports.
1885	$4,818,688.62	$4,638,483.34
1886	3,551,601.44	4,144,759.30
1887	5,104,308.50	4,719,301.52
1888	5,158,000.74	5,080,757.72
1889	4,942,024.28	5,814,576.02
1890	5,781,071.20	5,729,873.58

Table showing the exports to, and imports from, the United States since 1885.

Year.	Exports to the United States.	Imports from the United States.
1885	$1,651,731.74	$1,851,391.24
1886	1,545,573.26	1,325,321.91
1887	1,553,313.36	2,562,947.56
1888	1,910,412.54	2,660,337.68
1889	1,882,293.48	2,903,568.00
1890	2,047,024.10	3,580,347.42

Table showing the revenues and expenditures of Barbados in 1889 and 1890.

Year.	Revenues.			Expenditures.
	Customs.	Incidental.	Total.	
1889	$486,900.04	$303,753.19	$790,653.23	$701,307.95
1890	558,780.62	334,880.08	893,660.70	871,851.33
Increase	71,880.58	31,126.89	103,007.47	170,543.38

EDUCATION.

The amount expended by the Government for education during the year 1890 was $70,604.19, as against $69,233.76 in 1889; increase, $1,370.43. There is one college, three first-grade boys' public schools, one first-grade girls' public school, three second-grade boys' public schools, and over two hundred primary schools.

VITAL STATISTICS.

There were 1,056 marriages in 1889 and 976 in 1890. The number of baptisms was 7,316 in 1889 and 7,419 in 1890; increase, 103. The number of deaths was 6,358 in 1889 and 5,000 in 1890; decrease, 1,358. The health of the island during the year 1890 was good.

CRIMINAL STATISTICS.

The number committed to prison in 1890 was 3,083, of whom 1,493 were males, 1,504 females, and 86 children. Of this number one male prisoner was hanged for murder.

IMMIGRATION.

Little was done in the department of immigration during 1890. An agent was sent from Demerara with a view of inducing laborers to emigrate to that place, but up to the present his efforts have not met with great success.

IMPROVEMENTS.

The screw dock commenced in 1889 is not yet completed; neither have the harbor improvements been commenced. The artificial-ice factories have, however, been finished, and ice is plenty and cheap for this climate (about $6 per ton). A new brick company is in successful operation. The Government is inclined to improve the appearance of the city of Bridgetown, as indicated by an appropriation of $72,000 made by the legislature during the last session.

E. A. DIMMICK,
Consul.

UNITED STATES CONSULATE,
Barbados, August 25, 1891.

FOREIGN TRADE OF SANTA CRUZ.

REPORT BY CONSUL HORNE, OF ST. THOMAS.

The official census taken last spring shows the population of Santa Cruz to be 23,500. This is an increase of about 4,000 in the past decade. Ninety per cent of this population are blacks, who are chiefly engaged in the cultivation of sugar cane.

There is a regular line of steamers that touch at Fredericksted, both coming from and going to New York. Two packets ply between this island and St. Thomas, one vessel running to Christiansted, in the eastern part of the island, and the other to Fredericksted, in the western part. The packets make two trips weekly.

Telegraphic communication is maintained between the two islands (St. Thomas and Santa Cruz), which are 40 miles apart.

The total exports for the year ended March 31, 1891, were valued at $499,044.89, as shown in the inclosed table. Of this amount, $413,358 went to the United States. The imports for the same period amounted to $745,388, of which sum $417,643 came from the United States. This indicates that the bulk of the trade of the island is with the United States. The revenues of the island amount to $156,985 and the expenditures to $254,633.73, leaving a deficit of $97,648.73.

The sugar crop this season has been very small, owing to drought. The output is only 3,500 hogsheads of 1,500 pounds each. The usual crop ranges from 15,000 to 18,000 hogsheads. There are promising indications for next season's crop.

There are two consular agents on the island. Mr. Joseph L. Taylor, an American, is agent at Christiansted and Mr. Wm. F. Moore at Fredericksted.

Table showing the imports into Christiansted from various countries for the year ended March 31, 1891.

Description.	Denmark.		Denmark, via St. Thomas.		St. Thomas.	
	Value.	Duty.	Value.	Duty.	Value.	Duty.
Free	$943	.....	$2	.....	$2,262	.....
Dutiable:						
Fixed	111	$10	.....	.....	12,009	$947
5 per cent.	375	19	138	$7	4,090	204
12½ per cent.	3,142	395	466	58	80,257	10,026
Total	4,571	424	606	65	98,618	11,177

Description.	United States.		Other foreign countries.		Total.	
	Value.	Duty.	Value.	Duty.	Value.	Duty.
Free	$5,263	.....	$12,712	.....	$21,182	.....
Dutiable:						
Fixed	111,376	$9,853	31,779	$2,781	155,275	$13,591
5 per cent.	13,859	695	10,391	520	28,853	1,445
12½ per cent.	19,292	2,415	43,962	5,493	147,119	18,387
Total	149,790	12,963	98,844	8,794	352,429	33,423

Table showing the exports of sugar, rum, and molasses from Fredericksted to various countries during 1890-'91.

Whither exported.	Sugar.			Rum.		
	Quantity.	Value.	Duty.	Quantity.	Value.	Duty.
	Pounds.			*Gallons.*		
Denmark	1,423,980	$35,600	$1,780	24,260	$5,337	$160
United States	8,859,017	225,767	11,288	12,485	2,747	82
Other American countries	30,735	777	39	893	176	6
St. Thomas and St. John	253,677	6,495	325	26,013	5,725	172
Total	10,567,409	268,639	13,432	63,651	14,005	420

Whither exported.	Molasses.			Total.	
	Quantity.	Value.	Duty.	Value.	Duty.
	Gallons.				
Denmark	.....	.....	.....	$40,937	$1,940
United States	28,645	$3,437	$103	231,951	11,473
Other American countries	129,748	15,570	467	16,543	512
St. Thomas and St. John	468	51	2	12,271	499
Total	158,861	19,058	572	301,702	14,424

Table showing the exports of sugar, rum, and molasses from Christiansted to various countries for the year ended March 31, 1891.

Whither exported.	Sugar.			Rum.		
	Quantity.	Value.	Duty.	Quantity.	Value.	Duty.
	Pounds.			*Gallons.*		
Denmark	579,485	$14,487.15	$724.37	5,313	$1,169.05	$35.07
Other European countries	2,810,536	70,263.41	3,513.18	20	4.40	.13
United States	3,447,391	86,316.06	4,315.84	5,787	1,273.59	38.21
Other countries	657	17.13	.86	211	46.42	1.40
St. Thomas	276,731	6,976.42	351.85	11,873	2,613.54	78.50
Total	7,114,800	178,060.17	8,906.10	23,204	5,107.00	153.31

Whither exported.	Molasses.			Total.	
	Quantity.	Value.	Duty.	Value.	Duty.
	Gallons.				
Denmark				$15,656.20	$759.44
Other European countries	2	$0.29	$0.01	70,268.10	3,513.32
United States	7,879	945.48	28.36	88,535.13	4,382.41
Other countries	110,210	13,225.20	396.77	13,288.75	399.03
St Thomas	40	4.80	.15	9,594.76	430.50
Total	118,131	14,175.77	425.29	197,342.94	9,484.70

Table showing the exports of sugar, molasses, and rum to the United States from Christiansted for the year ended March 31, 1891.

Period.	Sugar.		Molasses.		Rum.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Pounds.		*Gallons.*		*Gallons.*	
First quarter	2,380,296	$77,301.31	5,134	$852.30	2,506	$1,050.20
Second quarter	1,005,313	37,769.67	6,254	1,142.02	2,334	905.97
Third quarter					419	219.81
Fourth quarter					1,006	463.42
Total	3,385,609	115,070.98	11,388	1,994.32	6,265	2,639.40

Period.	Limes, tamarinds, and sundries.	Total value.
First quarter	$531.79	$79,735.60
Second quarter	1,427.41	41,245.07
Third quarter	12.25	23,206
Fourth quarter	102.34	565.76
Total	2,073.79	121,778.49

Table showing the declared exports from the consular agency at Fredericksted to the United States during the year ended March 31, 1891.

Articles.		Quantity.	Value.
First quarter.			
Sugar	pounds	5,168,564	$164,343.15
Molasses	gallons	18,494	2,974.02
Rum	do	3,083	1,168.54
Bay rum	do	1,245	945.45
Hides	pounds	1,500	180.00
Second quarter.			
Sugar	pounds	3,205,704	105,090.09
Molasses	gallons	7,485	1,194.44
Rum	do	3,320	1,245.76
Bay rum	do	1,493	953.46
Hides	pounds	2,175	87.00
Third quarter.			
Sugar	pounds	312,765	11,939.75
Rum	gallons	3,213	1,242.74
Hides	pounds	590	47.20
Fourth quarter.			
Rum	gallons	462	168.00
Total			291,579.60

Table showing the number and tonnage of vessels entered and cleared at Christiansted during the year ended May 31, 1891.

Nationality.	Entered.		Cleared.	
	No.	Tons.	No.	Tons.
American	19	4,128	19	4,128
Danish	14	2,889	14	2,889
British	8	1,785	8	1,785
Norwegian	1	328	1	328
French	3	298	3	298
Total	45	9,428	45	9,428

Table showing the number and tonnage of vessels of 100 tons and over entered and cleared at Fredericksted during the year 1890–'91.

ENTERED.

Nationality.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
American	3	3,600	26	5,948	29	9,548
Danish	.....	.....	15	2,804	15	2,804
English	41	43,564	9	2,089	50	45,653
German	1	1,044	.....	.....	1	1,044
Norwegian	.....	.....	2	538	2	538
Venezuelan	.....	.....	1	130	1	130
Total	45	48,208	53	11,509	98	59,717

Table showing the number and tonnage of vessels, etc.—Continued.

CLEARED.

Nationality.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
American	3	3,600	22	5,207	25	8,807
Danish	.....	.....	17	2,846	17	2,846
English	41	43,564	14	3,368	55	46,932
German	1	1,044	.....	.....	1	1,044
Norwegian	.....	.....	2	538	2	538
Venezuelan	.....	.....	1	130	1	130
Total	45	48,208	56	12,089	101	60,297

SAMUEL B. HORNE,

UNITED STATES CONSULATE, *Consul.*

St. Thomas, W. I., August 21, 1891.

THE FRENCH MARKET FOR AMERICAN PRODUCTS.

REPORT BY COMMERCIAL AGENT LOOMIS, OF ST. ETIENNE.

The consular officers of the United States in France and elsewhere are frequent, indeed almost daily, recipients of letters and circulars from business men in the United States who desire to find a foreign market for their goods. These communications ask for all sorts of information and request a variety of more or less impossible favors. The main question asked is, "Can we find a market and an agent in your locality for our goods?"

The laws of supply and demand obtain here as elsewhere. If an American product is good and the French people are acquainted with its merits, they will buy it. But it should be continually borne in mind that the people of the nation are conservative, and that they do not rush after every novelty and fresh invention simply because it is new. This is particularly true respecting foreign goods and inventions.

The French people are not only conservative, but they are suspicious and rigidly economical. The American products which find a ready sale are those which have real merit and meet a real want. Notwithstanding the conservatism of the French people, it is no doubt true that they are becoming more liberal in their demands and more willing to adopt the conveniences and comforts of some of the other nations. Another decade of prosperous peace will augment a hundredfold the demand for foreign luxuries and modern comforts in France.

WHAT THE FRENCH PEOPLE WILL BUY.

There are many articles of American production which might be introduced with profit into this and other parts of France at the present time. In the rich and beautiful valley of the Isère—a district so fertile that it produces in the same season three distinct crops—there is a pressing need for

American agricultural implements. The implements in use are primitive in pattern and wholly inadequate for the service expected of them. I have heard a demand for plows and plowpoints of American manufacture, and I can readily understand the earnestness of it after having seen the crude implements now in use. Harrows, reaping and mowing machines, and rakes would also find some sale.

HEATING APPARATUS.

One deficiency which strikes and chills the foreigner in France is the absence of all system for heating large office and public buildings. There are in this part of France hundreds of large, handsome, well-built blocks and houses, not one of which, so far as I know, has any arrangement for heating other than small grates and stoves. The grates and open fireplaces are ill constructed, and the only satisfactory stoves in use are those made in the United States. The cold is often severe in this part of France, the winter lasting from three to five months, and cities like Lyons, St. Etienne, Grenoble, and Clermont-Ferrand really suffer from the want of proper artificial heat. I am sure that, if a strong and steady effort were made by American manufacturers of heating apparatus, a good market could be developed here.

BUILDING HARDWARE.

There is also an apparent need in France for building hardware of the light and tasteful description such as is used in the construction and finishing of modern American houses. The knobs, locks, bolts, hinges, and window fastenings employed throughout almost the whole of France are of the same weight and pattern as those in vogue a century ago. They are heavy, inelegant, and cumbersome.

PLUMBING.

The widespread necessity for good sanitary plumbing is perhaps the most real and urgent of the material wants of modern France. I am informed by a traveler of experience who has visited every department in this country that, outside of Paris and Nice, there are not three hundred houses and hotels supplied with decent water-closets or sanitary plumbing. My own observations confirm this statement. English closets and improved plumbing are being introduced to some little extent, but there is no reason why Americans should not grasp and expand the market. To supply the principal cities of France with good plumbing would be a philanthropic, as well as a business, enterprise.

ELEVATORS.

While I am on the subject of buildings, I may add elevators for passengers to the list of things France needs and will have in good time. I have yet to see a fast elevator in France, or one operated by steam. Most of those in use have water for their motive power, and, as the nation is never prodigal in its use of water, they go up and down (except when they break, and then the descent is swift enough) with a deliberation that is exasperating. As a

rule, the few elevators in France are unsafe and absurd in construction. If American elevators were once introduced, they would meet a real demand, and consequently find a steady market.

LIGHTNING RODS.

The Frenchman fears thunderbolts, but he rarely has protection against them. A lightning conductor in this part of France, where electrical storms are frequent, is an uncommon sight.

In the city of St. Etienne, with its population of 135,000, there are not a score of lightning conductors, and the very few which I have seen are of an obsolete pattern and probably more capable of working harm than of affording protection. If lightning rods could be offered to the French people with the same ingenuity and persistency which marked their introduction in the rural communities of the United States, the whole country would bristle with them within a few years.

GLOVE BUTTONS, ETC.

At Grenoble, in the eastern part of this consular district, there is a market for metallic glove fasteners, shoe fasteners, and glove buttons and clasps. Two or three American firms are already selling their wares at Grenoble with profit, and are competing successfully with local manufacturers of the same line of goods. The advantages which the American goods have are that they are made with more taste and delivered with more promptness than those manufactured in France.

A widely known manufacturer of kid gloves at Grenoble told me he had ordered $1,000 worth of glove buttons in New England and a similar quantity from a Grenoble firm on the same day. The New England goods, coming all the way from Boston, were received in Grenoble two weeks before the French manufacturer delivered his goods. Many of the French manufacturers are unreasonably slow, keeping no stock on hand, and are careless about their promises.

INDIAN CORN.

I think the day not very remote when Indian corn or corn meal will be successfully introduced as a food in France and other European countries. The wheat, barley, and rye crops fail so frequently that some other breadstuff must eventually be found. Fine corn meal mixed with coarse rye or wheat flour would make a cheaper, more wholesome, and more palatable bread for the working classes than the heavy, black stuff now in use. Coarse, black bread forms at least 70 per cent of the diet of the French peasant and working classes. They eat soup made of bread, cabbage, and potatoes three times a day. This, with a little wine, and sometimes a taste of sausage, constitutes their food. When I compare their fare with that of the poorer classes in the Southern States, which make such large use of corn, I am forced to the conclusion that it will be a fortunate thing for Europe when their poor classes add Indian corn to their daily diet.

The introduction and popularizing of Indian corn in Europe is an important matter, for it promises an outlet for the unmarketable crops which so frequently go to waste on our farms in the far West.

HOW TO INTRODUCE AMERICAN GOODS.

American foods and products can not be successfully introduced in France and a permanent, profitable market found for them without serious, intelligent efforts, coupled with liberal and judicious expenditure.

The consular officers of the United States can not introduce American goods or establish agencies for them. Many American manufacturers seem to think that it is a consul's duty to do this sort of thing, and they rather hint that they expect it of him. There may have been consular officers in the mythical "good old times" who made a practice of stepping out of their offices for a few moments before breakfast every morning to sell a steam engine, a road wagon, an automatic churn, or a new fertilizer; but the accommodating consuls of that class are all dead now, and their degenerate successors have neither the right nor the time to "post in a conspicuous place" all the illuminated and glaring advertising sheets and posters which come to them bearing that modest request, nor have they the right to "take the road" as commercial travelers for American houses which want European markets for their goods without making proper efforts to obtain them.

It will also be found, I think, that most goods can not be successfully brought to the notice of the French people by simply installing a gilded agent in a showy office at Paris. Orders will not flow in of their own accord; they must be sought for, and sought industriously. The same advertising methods that are employed in the United States can be used here with effect, and much can be accomplished in the way of preparing the public for the introduction of a new article by means of skillful newspaper paragraphs.

If an American manufacturer has an article to sell for which he desires to create a market in France, he should not make the mistake of thinking that Paris is France. He will find a market for his wares in some of the other cities as readily as in Paris, and perhaps with less expense. This is a rich country, and the people are doing without scores of the conveniences and comforts which Americans think essential to modern civilized life, and which Americans can furnish at prices which will discourage competition; but let no one think he can find a good market in France for his wares without intelligent, unremitting effort and the expenditure of considerable money if his business is a large one. Circulars, posters, illustrated catalogues, and ornamental agents will not do it; but hard, personal work, coupled with able newspaper advertising, will create and hold a market in any civilized country.

FRANCIS B. LOOMIS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
St. Etienne, October 31, 1891.

AMERICAN HARD WOODS IN ENGLAND.

REPORT BY CONSUL GRINNELL, OF MANCHESTER.

BOXWOOD.

The ninth edition of the "Encyclopædia Britannica" states that—

Boxwood, or *B. balearica*, is a tree of considerable size, attaining a height of 80 feet. It grows in Turkey, Asia Minor, and on the shores of the Black Sea; also in Persia. These are supposed to be the chief sources of the boxwood which comes into European commerce. The wood is of a yellowish color, hard, heavy, durable, very dense in structure, and has a fine, uniform grain, which gives it a singular value for the purposes of the wood engraver; it is much used by the turner, and a very large amount is used in the manufacture of measuring rules, mathematical instruments, etc. Great quantities are imported from the Levant into the manufacturing countries of Europe. The quantity (1885) which passes out from Constantinople yearly is estimated at from 5,000 to 7,000 tons, with 1,500 tons more of inferior and small pieces. While the consumption is continually increasing, the present sources of supply are rapidly becoming exhausted.

The best boxwood comes from the Caucasus, hitherto Turkish territory, but taken by Russia. Since 1872 some of the forests have been closed and others denuded of the tree. At that time (1872), in Persia, a wood was discovered similar to the Turkish or Abasian boxwood, and as much as 8,000 tons have, in some years, been imported from that country; but, owing to the exhaustion of the forests near the coasts and the increased cost due to scarcity and longer land carriage, the price is now almost beyond reach, except for the engraver, for whose use, it is affirmed, there is no substitute yet discovered.

The value (in England) of boxwood is as follows: Small or inferior pieces, $29.20 to $34.07 per ton; prime and very clear, $87.60 to $97.33.

In closing the information concerning boxwood, I have the honor to transmit herewith the original letter, with inclosure, of Robert Giffen, LL. D., assistant secretary of the board of trade, dated London, October 5, 1891.

CORNEL (DOGWOOD) AND PERSIMMON.

For some years, owing to the before-mentioned conditions, the importers of the wood for manufacturing purposes, shuttles, and turners' work, etc., have drawn upon the United States for their wants, using up to 60 per cent of their manufacture in cornel (dogwood) and persimmon. I quote:

We have nothing from the United States equal to boxwood, or near it. Perhaps the wood most closely resembling boxwood is hollin or some ornamental shrubs or fruit trees. The wood from the United States most closely competing with boxwood in the manufacture of shuttles is, first, cornel (dogwood); and, second, persimmon. Owing to the dearness of boxwood and the relative cheapness of cornel and persimmon, the latter have, during 10 years, largely taken the place of boxwood for shuttles. Cornel is generally preferred to persimmon. Their value here is $17.02 to $19.46 per ton. Manufacturers being now unable to procure boxwood, it is probable that other woods will be used exclusively.

Another importing firm writes from Yorkshire:

Dogwood, persimmon, and kindred woods are used for making shuttles for the heavy woolen trade, in place of the more costly boxwood from Turkey. They require very careful selection; the slightest blemish is fatal for the purpose named. We have done a little business in them, but the rejections were so great that we gave the business up as unremunerative.

This extract is commended to the careful consideration of growers, dealers, and shippers in the United States.

The best wood from the United States to supersede boxwood is dogwood (cornel, as it is more commonly called here), which, owing to its relatively moderate price ($18 to $20 per ton), may, it is thought, if more carefully selected, ultimately replace the more expensive boxwood for the purposes in question. The pieces should not be less than 5 to 6 inches in diameter, in length as long as convenient, say 12 feet, to be cut here into 13 or 14 inch lengths for working up. Of course, the wood should not be split, and the greater the diameter the better, if the heart is sound and it is free from other fault. It is again urged upon the shipper, as vital to the interests of himself and the trade, to reject all pieces doubtful or bad.

I give below the imports of boxwood into the United Kingdom since 1888, and the imports of cornel and persimmon shuttle blocks from the United States during the three years 1888-'90. I am indebted to Messrs. Irvin & Sellers, of Preston, for these, the only reliable statistics I have been able to obtain regarding these woods.

Table showing the importation of boxwood into the United Kingdom from 1888 to 1890, inclusive.

Year.	Port.	Quantity.
		Tons.
1888	Liverpool	3,247
	London	214
1889	Liverpool	4,760
	London	733
1890	Liverpool	4,951
	London	268

Table showing the quantity of cornel and persimmon shuttle blocks imported from the United States from 1888 to 1890, inclusive.

Year.	Quantity.	Cornel shuttle blocks.	Persimmon in logs or pieces.
	*Cases.**	*Tons.*	*Tons.*
1888	4,149	545	583
1889	4,925	1,211	988
1890	7,815	276	558

* A case will average about 200 blocks.

Of tapatera wood (*Tacomo pantyfilla*), which was introduced about twelve years ago from Maracaibo to take the place of the best boxwood for making

rules, there was imported into the United Kingdom in 1888, 879 tons; in 1889, 895 tons; and in 1890, 1,150 tons.

Some of the importers of these woods and manufacturers of shuttles are Irvin & Sellers, Preston and Liverpool; John Brown & Co., Manchester; H. Herrmann, 21 Dod street, Limehouse, London, E.; C. Taylor, Sons & Co., Fleetwood and Liverpool; Harrison & Singleton, Bradford (Yorkshire) and Hartlepool.

I desire to express my thanks for information to Messrs. Harrison & Singleton, of Yorkshire; Mr. Job Judson, of Bradford, a copy of whose valuable letter, just received, I herewith inclose; and especially to Messrs. Irvin & Sellers, hard wood merchants and manufacturers of shuttles, of Preston and Liverpool. Their excellent and thorough communication is inclosed herewith, and, with the statistics subsequently collected by them for me, deserve public acknowledgment. Messrs. Irvin & Sellers' firm dates from 1799, and can be addressed with confidence by growers and shippers of these woods. They unite the functions of importers and merchants in the wood with the manufacture of shuttles, which is not usual, I think. Their statements and opinions are of peculiar interest and value.

WILLIAM F. GRINNELL,
Consul.

UNITED STATES CONSULATE,
Manchester, October 26, 1891.

MR. R. GIFFEN TO CONSUL GRINNELL.

[Inclosure 1 in Consul Grinnell's report.]

BOARD OF TRADE,
London, S. W., October 3, 1891.

SIR: With reference to your letter of the 17th ultimo, asking for certain information respecting the imports of boxwood into the United Kingdom from Constantinople and the Levant, I am directed by the board of trade to forward to you herewith an extract from a communication which has been received from the department of Her Majesty's customs, and which, it is hoped, will furnish you with some of the particulars you desire:

"Boxwood is not an article which is distinguished separately in the import list, but is included under the general heading of 'wood and timber, viz, furniture, hard woods, veneers, and unenumerated.'

"The imports of the latter in 1890 reached the total of 82,519 tons, valued at £633,801. The quantity and value of the boxwood included in these totals is not known, as it is not incumbent on importers to describe the goods as boxwood, but only as hard wood unenumerated. A search through the bills for 1890, which were 413,592 in number, would not result in a definite quantity being arrived at.

"Boxwood, however, is imported chiefly from Turkey and from South Russia, and is mainly derived from the forests of the Caucasus, Armenia, the Caspian shores, and some from Persia. From these districts it would find its way to the United Kingdom through Turkish ports, and chiefly and principally through Poti and Batoum, ports belonging to Russia, and which are the outlets on the Black Sea for Persian, Armenian, Caspian, and Caucasian produce.

"Of hard woods unenumerated imported into the United Kingdom in the year 1890, there were received from South Russia 4,475 tons, valued at £46,705, and from Turkey 1,017 tons, valued at £8,132. While, therefore, there is no evidence to prove that these imports were composed of boxwood, it is probable, having regard to the countries from whence the imports came and to the average value per ton (the price varying from £4 to £13 per ton), that most of the quantities, if not all, were boxwood.

"Other imports may be transshipped at various European ports, and would be shown to the credit of the country in which the transshipment port is situated, and, therefore, it must be understood that the quantities imported from South Russia and Turkey do not represent the total imports."

I am, etc.,

R. GIFFEN.

MR. J. JUDSON TO CONSUL GRINNELL.

[Inclosure 2 in Consul Grinnell's report.]

BRADFORD, *October 22, 1891.*

In reply to your inquiries about persimmon and boxwood, I give you the benefit of my own experience and of the oldest user of these woods in the Bradford trade.

Boxwood is brought from the Levant in sticks about 5 feet long and 7 to 10 inches in diameter. The price is from $63.26 to $77.86 per ton, even more than this being paid by the Birmingham rule and mathematical instrument makers, who make the first selection. The other qualities are used in this neighborhood for shuttles, bobbins, and other purposes, the smallest size, or scrap, being utilized.

The persimmon wood is brought in about the same sizes as boxwood, and is sometimes cut to dimensions suitable for shuttles, which are called shuttle blocks. The objection to receiving it in this state is that they are carelessly cut, defects being negligently left in the block instead of being removed in the conversion; but its chief defect arises from the looseness of the grain or fiber, which, with the friction of moving to and fro in the loom, is apt to chafe and wear rough; sometimes splints appear, which destroy the warp, causing serious damage to the web, and consequently to the cloth, incurring cost for labor in restoring it to a merchantable condition. The price some years ago was $31.63 per ton; now it is $17.03 per ton. I do not know that the waste is of much value for bobbins or other uses, nor can I suggest any idea to increase its consumption. The fall in price seems to indicate that it is not so suitable for shuttles as boxwood.

Yours truly,

J. JUDSON.

MESSRS. IRVIN & SELLERS TO CONSUL GRINNELL.

[Inclosure 3 in Consul Grinnell's report.]

PRESTON, *September 24, 1891.*

In reply to your inquiry of September 18, we have to say that the best boxwood was, up to 1872, imported from the Caucasus, once Turkish territory, hence its name "Turkish or Abasian boxwood." The seizure of this territory by Russia caused the closing of some of the forests, and, the others becoming exhausted of the best wood, the remaining wood became so rough that the cost of obtaining clean, straight pieces increased more and more. In 1872 a wood was discovered in Persia, near the Caspian Sea, which, though not so hard or close grained, was clean and produced good cuttings at nearly the original cost of cuttings from Abasian wood. Since 1872 large supplies, from 8,000 to 10,000 tons in one year, have been imported from the last-mentioned place. For the last two or three years some of the forests in Abasia mentioned as closed by the Russian Government have been reopened, and 1,000 to 2,000 tons of a better quality have been imported from there.

A considerable portion of these woods was used in the manufacture of shuttles. Owing to enhanced cost—from increased duties, exhaustion of forests near the coasts, and consequent increased land carriage—their place for this purpose is now largely taken by cornel and persimmon woods from America. From 1,000 to 2,000 tons of boxwood are annually imported from Asiatic Turkey, which is of inferior quality and mostly small, say from 1 inch to 5 inches in diameter, and is used principally for turning.

Our replies to your specific questions are as follows:

Size of wood.—In boxwood, 5 inches and upward is classed as large wood; it is, however, seldom over 12 inches, the best size of large wood being from 7 to 9 inches. It is generally cut into short lengths (2 to 4 feet) for convenience of land carriage. Small wood is under 5 inches; it is imported from Abasia in sizes from 2 to 5 inches, the most valuable size being 3 to 4 inches if sound and clean. When the small wood is split its value is lessened 50 to 60 per cent.

Price.—This has not varied much during the last three or four years. The inferior wood is of twisted grain and knotty, and its value is from $34.06 to $38.93 per ton. A better quality, straighter and cleaner, is worth from $53.53 to $58.39 per ton. When very prime, clean, selected, fine wood it will retail at from $97.33 to $121.66 per ton. Small wood may be quoted, say, 20 per cent lower than large. The Asiatic Turkish wood is more knotty and of inferior texture, and is worth about $24.33 to $34.06 per ton. It is small, say 1 inch to 5 inches in diameter.

Similar wood from the United States.—We have nothing from the United States equal to boxwood or near it. Boxwood is prized for its close and firm texture, hardness, and color, while straight in the grain. Perhaps the wood most closely resembling boxwood is hollin or some ornamental shrubs or fruit trees. The woods from the United States most closely competing with boxwood in the manufacture of shuttles are cornel and persimmon. Owing to the dearness of boxwood and the relative cheapness of cornel and persimmon, the latter have during ten years largely taken the place of boxwood for shuttles, perhaps 60 to 80 per cent of these articles being now made of these American woods. Their inferiority consists in a more open grain; being softer, they do not wear so smooth and are not so durable. Cornel is generally preferred to persimmon. Their value here is from $17.02 to $19.46 per ton. Manufacturers being now unable to procure boxwood, it is probable that other woods will be used.

Best dimensions to import.—As long as convenient (to cut into 13 or 14 inch pieces), say 10 to 12 feet if obtainable; if not, 4 feet 6 inches, 5 feet 8 inches, or 7 feet. The larger the better. When free from heart shake or fault, they should not come for this purpose under 5 inches in diameter. The cheapest form imported now is the blocks cut in the United States, and, if the cutter will reject the bad pieces, this is doubtless the best form in which to export these woods.

Very faithfully yours,

IRVIN & SELLERS.

CLOSE OF THE FRANKFORT ELECTRICAL EXHIBITION.

REPORT BY CONSUL-GENERAL MASON.

The International Electro-Technical Exhibition, which was opened in Frankfort on the 16th of May last, closed on the night of October 19 in the presence of an immense throng of people, among whom were included many eminent scientists and official personages. The exhibition has been favored during the past two months with exceptionally bright and pleasant weather, and has been not only technically complete, but popularly attractive and

financially successful. The whole number of exhibitors was 455, the value of the exhibits nearly $2,000,000, and the number of paying visitors about 1,200,000.

Although international in name and scope, the exhibition has been mainly a display of what German inventors and manufacturers have accomplished in the field of applied electricity, and the variety and excellence of the exhibits made by several leading firms in Berlin, Nuremberg, Stuttgart, and Cologne has been a theme of surprise to all foreign visitors.

As was stated in an earlier report of this series, the plan of the exposition managers was to offer no medal or other premium, but to submit all competing exhibits to elaborate test and inspection by an awarding committee of the highest ability and authority, whose verdict would be the test of merit for each article in competition. This committee includes more than sixty of the ablest electricians in Europe, under the presidency of the eminent Dr. Helmholtz, of Berlin. It is divided into subcommittees, several of which have been busily at work in the various departments of the exhibition since midsummer. Their method was to apply to each machine and contrivance, wherever possible, the delicate and unerring instruments which modern science has provided to test and measure with absolute precision the effective value of each device, the amount of electrical energy it produces, transmits, or consumes, and the exact measure of the effect produced, and its cost. In all these respects applied electricity has become, in recent times, a nearly exact science, and the report of the present committee, which is expected to be finished and printed by the end of December, will furnish some very precise and interesting data upon several points of great practical importance. The report of the committee will, of course, be purely technical, and will be a text-book for future students and practitioners of electrical science. Pending its issue, the following may be accepted as a list of the exhibits which have been considered foremost in importance and have done most to make this exposition memorable:

(1) Long-distance transmission of electrical energy. This, as was explained in a previous report, has been accomplished by connecting a dynamo of large capacity, operated by water power at Lauffen, on the River Neckar, with motors and lighting apparatus in the exhibition at Frankfort, 108 miles distant. What the exact measure of success attained by this experiment is, the public is not yet informed. It is known in a general way that from 225 to 250 horse power have been generated at Lauffen, and from 175 to 200 horse power have been available from that source for lighting and motive purposes at the exhibition. Whether the loss by transmission has been 25 per cent, 20 per cent, or only 18 per cent, and also whether the conducting wires, insulators, transformers, and other appliances with which this current of extraordinary potential has been handled have stood the test of ten weeks' constant use, will be accurately known from the committee's forthcoming report. It seems, however, that certain difficulties and obstacles which were expected to be formidable and stubborn disappeared in presence of the

actual test, and that the teachings of this experiment would suggest several important modifications when the essay is again made on a similar scale. Even admitting a loss of 25 per cent through defective insulation and waste in transformations of current, the industrial value of long-distance transmission would seem to be fully demonstrated, and this alone is sufficient to make the exposition a memorable event in electrical progress.

(2) Next in order of importance is a new dynamo, or generator, invented and exhibited by a firm in Nuremberg, which renders possible an entirely new method of current distribution. It is pronounced by competent experts the most important advance in electrical generation and distribution that has been made anywhere since the Munich exhibition in 1883. It is impossible to describe the machine intelligibly without entering into technical details which would be meaningless to the ordinary reader. It will be sufficient to say that the device consists in connecting four fixed points of the armature with four sliding rings on the shaft of the dynamo. These connections may each be broken at will and be used, one, two, or all four at the same time. In this way continuous or alternating currents can be taken from the machine at the same time, and its versatility or usefulness enormously increased, since the same generator can not only supply one or more continuous or alternating currents at the same time, but may also serve as a motor, worked either by a continuous or alternating current. Two examples of this type of machine were exhibited, and, in the opinion of the ablest engineers, they open a new chapter in the generation and use of electricity as a motive power.

(3) Next on the list in respect to importance is the superb display of reflectors, or search lights, of an intensity and docility in working not hitherto attained; and after these may be placed the variety of new portable electric plants, in which the whole necessary apparatus is brought into close compass and mounted upon wheels in such manner as to be readily drawn by one or two horses over any ordinary road.

In the departments of electro-chemistry, instruments of precision for various scientific uses, in mining and pumping machinery, and in the wonderful production of scenic effects by electric light, as shown in the ballet theater within the exhibition grounds, this exposition has covered ground untouched by any previous display of its kind. A subsidiary but highly interesting department has been that of steam generators and motors, and it is doubtful whether so complete a collection of the most advanced and perfect types of stationary steam engines and boilers has ever before been assembled under a single roof, as in the machinery hall of the Frankfort exhibition.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, October 20, 1891.

JEWS AND JEWISH COLONIES IN PALESTINE.

REPORT BY CONSUL MERRILL, OF JERUSALEM.

Questions pertaining to the Jews occupy such an important place in the current literature of the world that a discussion of them, particularly of those phases which apply to Palestine, would seem to be demanded at the present time.

During the years 1882 and 1883 there was a sudden influx into this country of large bodies of Jews, so that the number of Jewish inhabitants was nearly doubled, and this increase was largely permanent. During the last decade the immigration of these people has more than once fallen off, only to be revived again; but, owing to circumstances which will be mentioned later, the tide of incoming Hebrews for more than two months past has been at its lowest ebb. This state of things exists while I am writing this report. At no time, however, have the Jews come to this country in such multitudes as is popularly represented, for very respectable journals have placed the number now in Palestine as high as 150,000, which is more than three times greater than the facts will warrant.

It may not be generally known that many of the Jews who come here do not remain, and so can not be reckoned among the Jewish population. Various causes lead them to retrace their steps, of which I will mention two or three.

Within the last twelve months a considerable number of well-to-do Jews have come to Palestine, and, after examining matters, such as business, prices of land, and prospects for investments, have decided against either settling or investing money here, and have gone away. Another class of rather poor people—not destitute, but of very limited means—have come, and, finding the various branches of trade to which they were accustomed already overcrowded, have left the country after a very short stay. Further, there has been a desire on the part of native Jews, either those who were born in the country or who have spent most of their lives here, to go to other lands, chiefly to the United States, with a view to better their circumstances. They have been led to this by the influx of Jews from outside—the opportunities for trade not having increased proportionately to the immigration of the past few years. Moreover, the Government has taken strong measures to prevent the increase of what it regards as an objectionable class of Jews, and has compelled about two hundred families to leave the country. Thus, while it may seem to certain enthusiasts in England and America that a great tide of emigration is setting towards the Holy Land, the facts that I have just mentioned tend to diminish the number of those who actually come, and they also show that the Jews do not find this country to be the paradise for them which the persons referred to would have the world believe. The laws of business, commerce, climate, and growth, to which people who would live here must be subject, can not be ignored. To pour into this

impoverished country tens of thousands of Jews would be an unspeakable calamity both for the country and for the Jews themselves. Mere enthusiasm of friends in Europe and America would not keep these poor immigrants alive.

Meantime reports of the "large number of Jews that are returning to the land of their fathers" still continue to be circulated in both the English and American newspapers. Hence a person on the ground, who is deeply interested in the welfare of the Jews, naturally looks about for the evidence of this (if it is as represented) well-nigh marvelous increase in the Jewish population of Palestine.

While it is not easy to obtain positive information as to the number of Jews in this country, as one might obtain similar figures from the Census Bureau at home, we have means which enable us to determine the number with approximate exactness. There are among the Jews organizations called "communities," where every Jewish family is supposed to be recorded. The secretaries of these communities furnish very reliable statistics. There are, besides the heads of the different colonies, heads of schools, pilgrim houses, hospitals, asylums or poorhouses, and the consuls representing different foreign governments, each of whom is able to give an account of those under his protection, and a few other sources where, if one will take sufficient pains, he may obtain the facts and information desired.

After a good deal of trouble, I have ascertained the following results: Nine cities and towns count among their inhabitants a certain number of Jews, as follows: Jaffa, 2,700; Ramleh, 166; Jerusalem, 25,322; Hebron, 1,200; Nabloos, 99; Tabareeyeh, 2,900; Safed, 6,126; Acre, 200; and Haifa, 1,640; making a total of 40,353 souls. In addition, eleven agricultural colonies report a total of 435 families; and, if we count five persons to a family—and there are reasons which make this number in this case too large—we can add about 2,000 to the former number, and say that 42,000 or 43,000 represents pretty nearly the number of Jews now in Palestine.

It would be interesting if we could ascertain the source of the extravagant statements as to the number of Jews in this country and how they get into circulation. These exaggerations certainly harm the Jews, as can readily be seen, and some of their most intelligent people have spoken to me strongly on the subject.

In this connection, it may not be out of place to say that during the early part of the present summer I was greatly puzzled by the reports which reached Jerusalem every fortnight, if not every week, of the surprisingly large number of Jews that were landed at Jaffa. At last I discovered that the boatmen were in the habit of counting every individual as a "family," so that if thirty Jews arrived on a given steamer it was announced that "thirty families" had arrived; if fifty souls came, "fifty families" had come, and so on.

If the Jews did not originate this vicious method of counting, I feel certain that they encouraged it. As an illustration, they are in the habit of

speaking of a cluster of houses, say of four, six, or ten, as the case may be, which join each other, as Jewish houses always do, containing one and possibly two rooms each, as a "colony." If you ask a Jew to state the number of Jewish colonies around Jerusalem, he will give you almost fabulous figures, because of his strange method of reckoning. These facts may be of service to people thousands of miles from here who are flattering themselves with the notion that the half of Palestine is already occupied by the children of Israel who have recently come hither from other lands.

Last year and during the first half of the present year new interest was awakened in Palestine by the great advance in the price of land, especially around Jerusalem. This movement could best be described as a regular "boom," and any intelligent American could see that it must be short lived. But the heads of these Oriental people have been completely turned by it, and no class has shared in the unnatural excitement more than the Jews. Such a thing was never before known in this country, and all sorts of wild predictions were made as to its immediate future. The "redemption of Israel" was thought to be at hand, and Palestine to be rapidly passing under the control of the Hebrew race. A great deal of land changed ownership, and pieces that had cost a few hundred dollars five years ago have been sold for as many thousands.

One is led to inquire for the reason of this sudden and wonderful rise in the price of land. No new manufacturing interests had been established, no mines opened, the soil produced no more abundantly than in former years, there had been no special production of wealth in any form, nor had the taxes or the hardships of military service been reduced; but there had been, first, a proposition to build a railroad from Jaffa to Jerusalem, a distance of 40 miles, and engineers and laborers were already at work to carry it into effect; secondly, there had been an unusual amount of extravagant talk by unwise friends of the Jews that Palestine was soon to be repeopled by them; and, thirdly, certain interested parties in this country were causing reports to be published and circulated in Russian, English, and American newspapers to the effect that now was the time to make fortunes here in the purchase of land.

The beginning of the railroad was looked upon by many people as a sure indication of an era of prosperity for Palestine such as it had not enjoyed since the days of the Herods. But even when completed, which can not be for one year, and probably not for two years yet, while it will be a convenience for those who have to travel between Jerusalem and the seacoast, it is doubtful if it can ever pay its ordinary running expenses, and as for its creating to any extent new sources of prosperity it will be simply impossible.

The kind of extravagant talk to which I refer may best be illustrated by the so-called "Blackstone memorial," presented to the President and Secretary of State in March of the present year. That document was weak by the absence among the signers of the names of certain persons who are best acquainted with Eastern politics, if not also with the character and

habits of the modern Jew. In reality, it was one of the wildest schemes that was ever brought before the public. The originators of the document do not know the designs of Russia upon this country; they do not know the designs of France upon this country; they do not appear to know that Turkey is not in the habit of giving away whole provinces for the asking; they seem to forget that Turkey has a right to say who shall settle upon her soil; they do not seem to be acquainted to any practical extent with Jewish character—in a word, they appear to be ignorant of two great facts, (1) that Palestine is not ready for the Jews, and (2) that the Jews are not ready for Palestine.

A sudden check was, however, given to this craze for land speculation by the order of the Turkish Government that no more Russian Jews should be allowed to enter Palestine. This was nearly three months since (about the 1st of July) and land immediately fell off one-third in price. For purchasers who intended to settle here the order was no doubt a blessing.

During the spring of this year scores of Jews came here with money, encouraged by the reports of the unusual revival of prosperity in Palestine; and with many of these, before they went away, I conversed as to their object in coming, and in every case it was freely confessed that it was not to buy land, settle upon it, and develop its resources, and thus do what they could to beautify and render prosperous this historic country, but it was that they might make money by buying and selling land.

It is certainly a pertinent question whether or not any considerable number of the Jews of the world desire to migrate to Palestine. The most reliable statistics put the entire number of Jews in the world at 7,000,000, and it is not probable that 2 per cent of these would care, or could even be induced, to come here to live. I have myself inquired of hundreds of well-to-do Jews in Europe and America if there was any general desire on their part or on the part of Jews with whom they were acquainted to remove to Palestine, and I have found that such a feeling exists only to a very limited extent, and that it is confined almost wholly to the poorer classes. As a rule, most Jews in the western world are so well satisfied with their present condition of prosperity that they would not on any account leave their homes for the hardships and uncertainties of a colonizing life in the land that once belonged to their very remote ancestors. Their mission in the world does not appear to be that of colonization.

We do not find the Jews engaged in ocean commerce, in mining, or in manufacturing; they are not tillers of the soil; they can scarcely be classed as producers of wealth in any important sense. As a race they are not "seeking a country," and they do not want land; they want wealthy cities, for there they know that they can thrive best. Hence we find them turning, as if by instinct, to the great centers of commerce and industry.

What I have said about Jews seeking centers of trade and avoiding entirely other places, even though more desirable as residences, is well illustrated in Palestine. They have here four sacred cities where they have always

lived—Hebron, Jerusalem, Tabareeyeh, and Safed. Of these Jerusalem, being the largest center, has the greatest number of Jews, since more than one-half of the Jewish inhabitants of Palestine are living here. Aside from these places, it is only within two or three years that a Jew could be found in any of the many towns of this country, and now they are found in five only, namely, Jaffa, Ramleh, Haifa, Acre, and Nabloos, all of which are important business centers. But in Ramleh, Nabloos, and Acre the entire number amounts only to 460 souls, the rest of the 4,800 being found in the two seaport towns, Haifa and Jaffa.

With regard to the colonies, it would seem, by comparing all the talk that has filled the world for the last fifteen years about planting the Jews in Palestine and all the efforts, including the money spent, that have been made in this direction, with the actual results as seen to-day, that the Jews do not have much desire to become colonists. Able-bodied men who have to be hired to be colonists are not the kind of material that is needed to make a new settlement flourish.

Out of the 439 families reported as belonging to the different colonies in Palestine 255 of them are actually paid so much a month by the Rothschilds. This amounts to about $4 for each individual, so that, if a tenant family consists of a man, his wife, and three children, his monthly allowance would be $20. The tenant also has his house rent free, and all expenses for schools, synagogue services, doctors, medicines, and water supply are paid for by the Rothschilds fund. This is a very generous gratuity; it is an inducement for a Jew to join a colony, and it supports him while he is learning the art of agriculture. What would have been the result, does one suppose, had the United States Government adopted such a plan in the settlement of the different Western States? To state the proposition is to expose its absurdity. Yet this one fact illustrates the difference between a Jewish colony in Palestine and settlements that have been made by enterprising Americans in the West. Where the stipend is sure, as it is in the case of these Jewish colonists, personal energy is not likely to be relied upon as the chief element of success.

Jeruaslem is likewise made attractive to the poorer classes of Jews by the fact that money is collected in other parts of the world and sent here for their support. Every family receives a portion (*haluka*), and, as the amount can be depended upon with some regularity, it becomes an essential help toward their annual expense of living. The recipients of this gratuity do not think so, but it can be shown that this distribution of money is really a curse. To make such a statement will be to incur the censure of certain persons, and it will, no doubt, be ascribed to prejudice; yet I can give the best Jewish authority for the same opinion, stated even in more emphatic language than I have used. Its result is demoralizing—it takes away individual independence and it encourages pauperism. Both the practices now referred to are wrong in principle and pernicious in their effects.

There is near Jerusalem a settlement of Germans called the "Temple Colony," and it is one of the most attractive places in Palestine. No rich Germans joined it; only a few of them were well to do, and the most of them were poor families, not any better off than the average Jewish families that are hired to live in the Jewish colonies. They receive no help from any source, but by hard work, energy, perseverance, and frugality they have built comfortable homes, planted gardens and trees for fruit and shade, and made their settlement neat, prosperous, and beautiful. They have in Palestine two or three other colonies equally flourishing. I will not mention the name, but I visited one of the largest Jewish colonies in the country, and the general appearance of it was one of dilapidation; houses were broken and patched, windows were stuffed with rags, dooryards were covered with litter, outhouses and fences were neglected, crops were poorly cultivated, and weeds were growing abundantly everywhere. The contrast between this Jewish colony and the German Temple Colony shows just the difference which exists between Jews and Germans as agriculturists and as colonists.

Without following this topic further, it may be said that the planting of Jewish colonies in Palestine, from which the friends of the Jews have hoped so much, is only an experiment whose success is by no means assured.

The reasons why Jewish agricultural colonies in Palestine are practically a failure—a condition which is likely to continue so long as efforts are made to plant them here—are due not so much to climate, soil, and government as they are to peculiar traits in Jewish character; and, as this phase of the question is constantly overlooked by the friends of the Jews, I have thought best, since I have had unusual opportunities for many years of studying this matter, to give to it special prominence in this report.

SELAH MERRILL,

UNITED STATES CONSULATE, *Consul.*

Jerusalem, October 3, 1891.

MINING COMPANIES IN HONDURAS.

REPORT BY CONSUL PETERSON, OF TEGUCIGALPA.

A circular from the Department, bearing date of February 6, 1891, requesting information concerning mining laws, mines, and mining industries was received by me May 24, 1891, and I hasten to comply with the request, which has been delayed in the mails for a period of one hundred and seven days.

On January 10, 1891, I forwarded to you a copy (in English) of "The Mining Laws of Honduras," and I respectfully direct your attention to that pamphlet for all provisions regarding distinctions between the precious and base metals, precious stones, tin, etc., and the laws and regulations prescribed for the operation, denunciation, ownership, extent of claims, abandonment, penalties, etc., of mining properties in Honduras, and all the prerequisites and formalities necessary for entering thereon.

As to the mineral resources of Honduras, so far as gold and silver are concerned and the steps taken for their development, an idea may be formed from the following list of mining companies in Honduras taken from the Honduras Mining Journal:

The New York and Honduras Rosario Mining Company (American), district of San Juancito; the Santa Lucia Mining and Milling Company (American), district of Santa Lucia; the Suyapa Silver Concession, limited (English), district of Tegucigalpa; the Victoria Mining and Milling Company (American), district of Santa Lucia; the Zürcher and Hermanos Mining and Milling Company (Swiss), district of Yuscaran; the Guayabillis Mining Company (American), district of Yuscaran; the New Guayabillas Company, limited (English), district of Yuscaran; the Yuscaran Mining Company (American), district of Yuscaran; the Central American Reduction Company (American), district of Yuscaran; the Monserrat Mining Company, district of Yuscaran; the Los Angeles Mining and Smelting Company (American), district of Valle de Angeles; the San Marcos Mining and Milling Company (American), district of Sabanagrande; the Guasucaran California Mining and Milling Company (American), district of Guasucaran; the New Orleans and Curaren Mining Works (American), district of Curaren; the Dos Hermanos Mining and Milling Company (American), district of San Juan del Corpus; the Aramecina United Gold and Silver Mining Company, limited (English), district of Aramecina; the Central American Syndicate Company (Honduranean and French), departments of Tegucigalpa, Paraiso, and Choluteca; the San Rafael Mining and Milling Company (American), district of Gobernador, Nacaome; the Cortland and Honduras Mining Association (English), district of Nacaome; the Clavo Rico Mining Company (American), district of El Corpus; the Dakota Mining Company (American) district of El Corpus; the Dakota Mining Company (American), district of Minas de Oro; the A. Y. Gold Ledge Company (American), district of Quebrada Grande, Olancho; the Guayape Placer Mining Company (English), department of Olancho; the Retiro Honduras Gold Mining Company (English) department of Olancho; the Honduras Gold Placer Mining Company (English), district of Retiro, Olancho; the Concordia Gold Mining Company (American), district of Concordia, Olancho; the Olancho Syndicate (American), department of Olancho; the Rector Mining and Milling Company (American), department of Olancho; the Santa Cruz Mining and Milling Company (English), district of Santa Cruz, Santa Barbara; the New York and Camalote Mining Company (English), district of Camalote, Santa Barbara.

Besides the above-mentioned companies there is organized a wealthy French syndicate to work a number of mines in Honduras. This French syndicate is about to begin practical operations in the mining camps of San Martin, on the Pacific coast of Honduras. There are also a considerable number of mineral-land concessions which are placed on foreign markets, and of which a number will receive a considerable amount of prospecting and exploring work.

All the above mines are not active, that is, producing. The principal producing mines are the New York and Honduras Rosario Mining Company, the Los Angeles Mining and Smelting Company, and the Santa Cruz Mining and Milling Company. Some of the others are producing to a limited extent; some, notably those of the Yuscaran, Olancho, Nacaome and Tegucigalpa districts, are in process of development (mills being erected, etc.), while some are entirely inactive. In addition to these, there are a number of concessions to individuals who are trying to organize companies, etc.

JAMES J. PETERSON,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, May 26, 1891.

FOREIGN COMMERCE OF SPAIN.

REPORT BY CONSUL BOWEN, OF BARCELONA.

The following table shows the commerce of Spain and the Balearic Isles during the first five months of the years 1889, 1890, and 1891:

IMPORTS.

Articles.	1889.	1890.	1891.
	*Pesetas.**	*Pesetas.**	*Pesetas.**
Stones, minerals, crystals, etc	26,004,159	30,095,840	35,847,341
Metals and manufactures thereof	13,539,223	18,363,707	14,853,885
Drugs and chemical products	20,086,833	24,088,977	24,102,338
Cotton and manufactures thereof	56,774,919	43,022,005	58,016,678
Flax, thread, etc	13,216,292	13,930,330	13,966,022
Wool and manufactures thereof	14,310,807	12,889,759	13,851,698
Silk and manufactures thereof	8,432,053	7,815,176	7,432,035
Paper and manufactures thereof	3,937,452	3.383,348	2,852,943
Wood and manufactures thereof	19,574,908	19,393,698	18,510,428
Animals, skins, etc	20,246,512	16,782,113	21,034,022
Machinery and carriages	20,214,590	21,675,792	19,560,250
Food (cereals, meat, sugar, wines, etc.)	67,486,951	86,386,735	75,828,192
Wheat	9,435,261	9,832,661	12,860,032
Sugar	16,699,641	20,687,588	13,705,742
Brandy	852,495	9,144,449	7,407,224
Wines	67,486,951	86,386,735	75,828,192
Total	287,110,419	301,095,105	308,504,931

EXPORTS.

Minerals and ceramics	43,689,638	43,308,903	35,089,551
Metals and manufactures thereof	46,521,306	51,031,869	46,657,246
Drugs and chemical products	9,133,106	10,741,282	11,258,515
Manufactures of cotton	6,483,319	7,627,490	6,951,066
Wool and manufactures thereof	5,877,106	4,632,741	3,715,035
Silk and manufactures thereof	1,784,263	1,143,221	1,470,808
Paper and manufactures thereof	3,998,878	3,995,816	4,016,615
Wood, cork, and rags for paper	13,156,590	13,204,276	14,714,405
Animals, skins, etc	17,804,515	18,900,165	18,845,506
Machines	821,218	254,548	551,664
Food (cereals, meat, nuts, fruit, etc.)	181,915,298	162,565,419	194,692,833
Olive oil	13,702,872	6,596,332	4,759,572
Wine:			
Ordinary	123,506,760	108,882,750	144,821,790
Sherry and its like	10,530,390	12,124,580	13,723,970
Total	333,655,951	319,907,694	340,207,337

*1 peseta = 19.3 cents.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, July 17, 1891.
No. 136——3.

SOUTH AFRICAN SHEEP AND GOATS.

REPORT BY CONSUL HOLLIS, OF CAPE TOWN.

The statistical census for 1890 gives the following as the number of sheep and goats in the whole colony: Wooled sheep, 11,032,361; other sheep, 2,170,418; total sheep, 13,202,779; Angora goats, 2,829,681; other goats, 1,737,740; total goats, 4,567,421.

It is presumed that the peculiar sheep of the colony (the flat-tailed) are well known to all. From all I can learn they are the native sheep of South Africa, a big-boned, heavy sheep, the tail weighing from 15 to 20 pounds, with a scanty covering of what is said to be hair. At all events, the microscope will easily settle that point. These are the sheep that figure in the statistics as "other sheep," about one-sixth of the whole number. Many of the old Dutch Boers will not change this type, refusing to introduce from outside any rams into their flocks. So this type holds its distinctive features among that class of farmers. Others will cross a few for the sake of a better article of mutton, but not to any great extent.

For much interesting information regarding the efforts made to improve the character and weight of the clip I am indebted to a paper read by Mr. Henry Oglive before a farmers' association at Craddock, whose experience in sheep-farming dates back fifty years. He states that by crossing the white-haired Cape ewes with the imported merino rams the present race of sheep was produced which is now found. To carry out this plan, a joint company brought out 200 ewes and stud rams of the Darien and Josephine breed. Rams from this flock brought £25. The cross with this breed was said to produce a sheep with a good body, but two or three crosses were necessary to produce a good fleece. These crosses seemed to be well adapted to the country, and the flocks multiplied rapidly. The Kaffir war of 1845 harassed and dwindled the stock, and the heavy rains of 1848 seemed to bring disease into the flocks, which had previously enjoyed immunity from sickness. It was at this time that the importation of South Down, Romney Marsh, and Saxony was begun. The former, being coarse-wooled, threw the fleece back into almost original coarseness, and the other varieties did not suit the country; neither did farmers exercise care or discretion in crossing. Sheep deteriorated and scab appeared.

In 1854 lung sickness first appeared in the colony, and has been more or less prevalent ever since.

In 1859 the Rambouillet rams were imported and sold for as much as £100 to £150. This was a much inferior ram to the one of the same name to-day, the former being long-legged, big-bodied, and coarse-wooled. They were said to be a cross between the merino and the Cots merino, and the effect of their importations on colonial flocks was disastrous. Still later the Australian rams were introduced, and have met with favor, the general opinion being that they are a type well suited to this country.

It will thus be seen that the original stock, which probably wandered down here from Barbary, has been crossed and recrossed by rams from Saxony, Spain, France, England, and Australia. This year I note the advent of about fifty rams of the Vermont Spanish merino, of which I will speak more at length at the close of this report.

Of the goats, there are, as I have said, two kinds—the Angora, of which nothing need be said, nor of the others, further than to say that they are the native goat of South Africa, and, like the sheep, distinguished by the general coarseness of their hair. Speaking from what information I have been able to gather, I should say that a complete and special classification of Cape wool would be necessary. It may be of interest to note the importation of sheep for the past year and compare the value of those from the different countries. The whole number imported was 425. The number from the various countries and the price per head were as follows:

Countries.	Number.	Price.	
		£	s.
United Kingdom	246	1	10
South Australia	114	50	10
Victoria	12	26	5
Belgium	10	1	1
Germany	43	41	4

The whole number exported was 1,404, at £1 6s. per head, from which it appears that the character of the stock which goes out of the colony compares very unfavorably with that which comes in.

Some of my earlier reports have called forth considerable correspondence on the advisability of importing into the colony the high-bred merino sheep from Vermont and northern New York. I was of the opinion that the venture was worth trying, though the risk was extra hazardous, considering the character of the Atlantic voyage, the danger and risk of transshipment, and the long voyage from Southampton to the Cape. However, while urging one my of correspondents to come out with a small trial lot, I received a letter from another sheep-breeder, Mr. C. E. Witherell, of Cornwall, Vt., stating that he would soon leave New York with forty selected rams, and wishing me to advertise them in advance of his arrival. This I did, and, the legislature being in session and the colony thus well represented at the Cape, we succeeded in arousing public curiosity, and the visitors to the flock included the governor and most of the members of Parliament. Only a few of the flock were sold here. The remainder were taken to Port Elizabeth, and, from a letter just at hand, I learn that thirty-three have thus far been sold. Some brought as much as £150, but whether the venture, as a whole, has been successful or not I can not say, Mr. Witherell simply saying that if he came out without loss he would be fortunate. Considering the strong prejudice he had to contend against as to the advantage or otherwise of the strong distinctive characteristics of his flock, coupled with the ultraconserv-

ative nature of the Dutch farmer, I think the venture may be called a success. I learn at the custom-house that the flock was entered at £1,050, or £26 5*s*. each. Of course, that can not be taken as the real valuation.

The ram sales at Beaufort West, western province, are reported as more successful than in previous years, the stock being in good condition and in great demand. The average price realized was £3 5*s*.

From Orange Free State and the northern portion of the colony great mortality was reported among the flocks during the recent cold, wet weather, many farmers losing more than half of their stock, due, in a great measure, to insufficient housing.

GEO. F. HOLLIS,
Consul.

UNITED STATES CONSULATE,
Cape Town, September 15, 1891.

INDUSTRIES OF ROUEN.

REPORT BY CONSUL WILLIAMS.

During the last year there was great activity in cotton spinning and weaving, although the weavers complained of diminished profits. Cotton goods known as "Roueneries" and "Indiennes," as well as bleached and dyed goods, were under a cloud for some time, but they experienced a strong reaction towards the close of 1890, at least in the way of important sales. At the close of the year 1890 the sales of "Roueneries" and handkerchiefs were satisfactory, and the stock of this large manufacture, peculiar to Rouen, was exhausted.

The condition of the trade in chemical products and the tannery industry was not satisfactory, while distilleries felt the effect of the tariff, from which they are now temporarily emancipated.

The improvement in the shops for the construction of machinery has tended to bring in many orders and to revive this important branch of manufacture. The manufacture of many machines and tools of American invention patented in France has greatly assisted in bringing about this result.

The refineries of petroleum have found their business profitable, and continually increase their capacity for manufacture.

The manufacture of elastic tissues (belts, braces, etc.), has been almost without change since 1860. The exports are valued at about 3,000,000 francs annually.

The principal materials used by manufacturers are cotton, coal, iron, India rubber, dyestuffs, petroleum, oils, hides, and phosphates for fertilizers.

CHARLES P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, August 25, 1891.

SHEEP AND WOOL IN BRITISH INDIA.

REPORT BY CONSUL-GENERAL MERRILL, OF CALCUTTA.

In reply to the question as to how many races of sheep there are in India, I would answer there are three. The ordinary observer is led to doubt the correctness of this statement, or at least to conclude that climate or other causes have produced remarkable changes. Some variety of these animals is found in each of the provinces of India proper, but there is no breed peculiar to British Burmah. Large numbers of sheep are imported from Calcutta and the Coromandel coast for the purpose of food for the Burmese, and the skins, after being salted without removing the wool, are reëxported to other parts of the world.

It has been impossible, notwithstanding repeated efforts, to obtain recent information in regard to Indian sheep and wool, except from the presidency of Madras, the native state of Mysore, and the provinces lying contiguous to the Himalaya Mountains.

They are not confined to any distinct provinces in the presidency of Madras, but are pretty equally distributed throughout. They are only kept for wool-bearing purposes in a few districts, the common variety found being a hairy, woolless animal. The woolly sheep are found in fair numbers in the southern districts (Trichinopoly, Madura, and Tinnevelly), in the ceded districts and Kurnool, and in North Arcot, Salem, and Coimbatoor. With the exception of those in the last-named district, the sheep are usually black-wooled. In Coimbatoor, however, a small, black-faced, white breed of some value is found. The wool of none of these sheep is of good quality, being coarse in fiber and usually mixed with a good deal of hair.

It is impossible to get a list of the sheep of each province, as they are always classed together with goats. A list of the two species combined is as follows:

Table showing the number of sheep and goats in the Madras presidency.

District.	Number.	District.	Number.
Gangam	58,243	South Arcot	780,320
Vizagapatam	48,862	Tanjore	520,169
Godavery	144,414	Trichinopoly	969,427
Kistnah	528,892	Madura	665,837
Nellore	563,063	Tinnevelly	795,123
Cuddapah	1,294,405	Coimbatoor	1,356,171
Ananatapoor	880,557	Nilgiri	7,223
Bellary	600,407	Salem	1,170,922
Kurnool	585,486	South Canara	9,363
Madras	2,489	Malabar	60,462
Chingleput	255,495	Total	12,063,471
North Arcot	766,141		

The wool is not subjected to any special preparation for export. In point of fact, the export of wool is not an industry of this part of India.

A portion of the wool is spun into yarn in the villages and woven in hand looms of the most primitive character into coarse blankets, carpets, and rugs. In a few places in the Bellary district superior blankets are also made from selected wool, which command considerable prices locally; but this industry is of a very limited character.

It has been impossible to ascertain the designations of the various wools; indeed, it is doubtful whether there are any.

The total number of sheep in the province of Mysore is about 2,500,000, and the average number in a flock about 100.

There are three breeds, the Karubar, or ordinary variety, so-called from the caste people who rear it; the Gollar, which is less often met with, and which owes its name to the same cause; and the Yelaga, which is the scarcest of the three.

As regards color, black, brown, and white are to be found in all three of these breeds; but in point of quality the Karubar, which is a small sheep, with horns curling backwards, is superior both in wool and flesh to the two remaining varieties.

The Gollar may be distinguished from the above by its larger size, coarser wool, and longer neck. The head and jaws also differ somewhat in their formation.

The Yelaga is longer in the leg, and though, on this account, standing higher than the other breeds, is less bulky. Indeed, in appearance it is more akin to the goat than the sheep. Its wool is never shorn, as it is too coarse for manufacture. It is kept more for draft purposes and the carriage of children.

The Gollar is the hardiest of these three breeds, being the only one which is at all seasons of the year left unhoused at night.

It is believed that none of these sheep will interbreed, and the quality has lately, owing to carelessness in tending the animals, considerably deteriorated. They subsist entirely by pasturage, grain being unknown to them.

Shearing takes place twice a year, fifty fleeces amounting to about 26 pounds in weight. The wool is all coarse, and is made into rough *kamblies* (blankets). There was formerly a Government manufactory, which turned out good blankets made from the wool of the white sheep on the farm, but this has now been abandoned.

Dr. Shortt says:

The woolly breed of sheep which exists throughout Mysore is fairly esteemed, both for its mutton and wool-producing qualities. The rams stand 25 inches and the ewes 23 inches in height. The ordinary live weight is from 40 to 60 pounds, but grain-fed wethers attain 60 or 80 pounds. The fleece never exceeds 3 to 4 pounds, and the staple averages 3 to 4 inches in length. An ordinary sheep fetches from 2 to 3 rupees* in the market, fat wethers from 7 to 10 rupees each.

Shearing, as said before, takes place twice a year, once in June or July and again in March. The former season produces the best wool, as the

*1 rupee=40.4 cents.

fleece is then very soft, whereas in March it is apt to be stiff, owing to the cold. On the day previous to shearing the sheep are collected into one place and are then driven into a tank and well washed. After this they are allowed to graze in the sun for one day. The operation of shearing extends over about a month, and is conducted by the manufacturer himself. The best fleece is obtained from the young sheep and from the back and neck of the old ones. The instrument used consists merely of a blade of iron of local manufacture and bent into the shape of the letter V, thus forming two blades, which are pressed against each other in the act of shearing. One man is able to shear about fifteen sheep a day, and each sheep is capable of yielding, on an average, a seer of wool. During the period the manufacturer is engaged in his work he manages to accumulate 10 or 12 maunds (240 to 288 pounds) of wool.

Sorting is the next operation to be attended to, the wool being divided into three qualities, (1) that from the back and neck, (2) from the sides, and (3) from the legs and belly. This last is very inferior and is generally rejected.

The wool is then cleaned by the women of the family, who use a small string bow of native make, which separates from the fleece all foreign matter, and afterwards it is spun by them into yarn on the ordinary native spinning wheel. Much dexterity is required in spinning this yarn, and, as the quality of the article manufactured depends entirely on the fineness and evenness of the yarn employed, it is obvious that the women have to exercise great care in the operation of cleaning.

The next operation is the laying out of the warp, which is done so that the individual threads lie separately and from the shed, which is carefully preserved by sticks placed at suitable intervals throughout the full length of the web. It is hardly necessary to describe the warping machine, it being the usual primitive yet effective kind, and varying only as to the length or breadth of the web. From the warper the thread is removed and stretched between two bamboos upon supports about breast high. This is done in order to carry out the starching or sizing process. Tamarind seeds are generally used for this purpose. The husk is removed and the pulp crushed and soaked in a proportionate quantity of water for a day; the mixture is then boiled until all the superfluous water evaporates, leaving a paste of the consistency of honey. While still warm the paste is applied to the threads with a brush made of thin reeds, and the whole is allowed to dry in the sun. A second application of the paste is then resorted to and treated in the same manner. The process is continued until the threads are stiffened to the requisite degree.

There now remains the last operation, viz, that of laying out the warp threads on the loom. In connection with this it will be necessary to give a description of the loom itself. This is an exceedingly simple, though somewhat rude, apparatus, well adapted for the purpose for which it is made. One does not find that delicacy of workmanship or that intricacy of design

in the various parts of which it is composed which are the usual characteristics of modern inventions; but there is this recommendation, the apparatus costs very little in making and when out of order can be easily mended with the assistance of but few implements. Practically, this is not an insignificant consideration, in view of the fact that, if the loom is out of use for a single day, it entails loss on the manufacturer. It must, however, be borne in mind that this rudeness of appearance in no way detracts from its utility. The loom somewhat resembles that employed by cloth-weavers; but there is this difference, the cloth-weaver employs two sets of healds and a treadle, while the "kumbly," or blanket manufacturer, is satisfied with a single set, nor does he use any treadle. The loom itself is composed of the beam, a heald frame, a reed, and a batten. The beam is a thick, square piece of strong wood about 2 yards long, whose transverse section measures 9 by 9 inches. It has four rectangular sides, one of which has a groove about as long as the beam, 6 inches broad, and 3 inches deep. Along this groove at the sides there are about twenty-four holes opening into it, in which small plugs are inserted. The object of this arrangement is to enable the warp threads to be collected in the groove and held tight by a stick being placed over them in the groove and the plugs driven over the stick through the side holes to keep it firm. At one of its extremities the beam has four holes somewhat larger in size, one on each side. A peg driven into the ground passes through one of them. The other end has another peg in front of it, against which it passes at the distance of about 3 yards from the beam, and at intervals extending over the whole length of the warp are placed bamboo rods, which keep the shed constantly open. The last rod has at its ends two ropes, which, passing round a peg at the furthest end of the loom, are long enough to be brought back and wound around another peg in close proximity to the beam. By this arrangement the weaver is enabled, by pulling the ropes, to keep the warp threads stretched as tight as he pleases. Midway between the beam and the rods is placed a reed with as many dents as there are threads in the warp passing through them. This keeps the thread separate and distinct. Between the reed and the beam is suspended the heald frame. This is a contrivance consisting of two pieces of wood placed one over the other at the distance of about 2 feet. Over and under these rods pass cotton healds. The upper rod of the heald frame is hung to the ceiling by means of a rope, with its two ends attached to the extremities of the rod from the two sides of an isosceles triangle, having the rod itself for its base. The tightening and releasing of the rope attached to the heald frame governs the action of the shed. The batten is a heavy instrument of wood, very similar in appearance to, and about twice as long as, a cricket bat without the handle, and is used for driving home the weft.

The weaver's arrangements are now complete. He has only to sit and work at the loom. For this purpose he sinks a pit deep enough for letting down his legs and makes the ground floor his seat. Before him, on a level with his breast, lies stretched the weaving apparatus. The warp threads are

now laid on the loom in the manner already indicated, with the ends collected in the groove in the beam. A flat piece of wood as long as the groove is fitted into it, and pegs are driven over it through the side holes. The warp threads are thus kept tight in their places, and in a way not easy to pull out. With his hands the weaver moves towards himself the heavy heald frame suspended in front of him at the distance of his arms' length. This has immediately the effect of raising one series of alternate warp threads, which, with the other series parallel to the ground floor, form an angle. The weaver is thus enabled to move his shuttle across the web through the opening. The shuttle is a single joint of bamboo or hollow reed, closed at one end, into which the weft yarn is filled or pushed in with a stick, which pays out as the shuttle is thrown from side to side and is beaten up into position by the use of the batten, the shed being raised or depressed after each passage of the shuttle. These successive manipulations are continued until a web of about a foot in length is completed. The beam is now removed from the peg on which it hitherto rested and twined round and made to wind the web around itself. After this is done it is replaced on the peg and the weaving is resumed.

The best blankets are manufactured at Chitteldroog, owing to the fineness of the yarn used. The manufacture of a blanket 12 cubits in length requires a man to work hard for twenty days. Prices range from 5 to 100 rupees each, but the ordinary article averages between 5 and 10 rupees ($2.20 to $4.40).

There are large numbers of sheep in the presidency of Bengal, but no one can boast of the quality either of the meat or the wool. But little outside trade is done in the wool line, the shepherds finding a sufficient market at present by weaving it into blankets, which they dispose of locally. Fleeces of dead sheep are not shorn, but where used are plucked out. During hot weather the flocks are driven northward, where, for a mere nominal sum, they will fairly keep themselves, while during the rains practical farming planters are glad enough to let them have the magnificent grazing of the inevitably heavy undergrowth in their indigo land, charging the value of one sheep in each hundred for the right. The water in Bengal is hard and the pasturage contains a large proportion of calcium, so that the food upon which the sheep graze causes the wool to be dry, stunted, irregular in staple, harsh in feeling, coarse, brittle, inelastic, with the yolk of the fiber scanty and poor. It is very kempy, that is, full of white, hairy, coarse bristles, which protrude and will not dye or become amenable to any process or operation of improvement. There is but one redeeming feature possessed by the sheep in this presidency—they are susceptible of more rapid improvement by care and intelligent cross-breeding than many other classes of this animal. Good breeding is said to insure length of staple, uniformity, and fineness; but, on the other hand, softness and elasticity are generally considered to be dependent on the particular nature of the pasturage on which the sheep feed and certain essentials in the water they drink. The want of the two last properties in Bengal wool,

for example, has been attributed to the presence of an undue quantity of lime in the water the sheep drink. Similarly, fodder grasses grown on a calcic soil are stated to have a like detrimental effect on the wool. Again, both the quantity and quality of the fleece is held to be unfavorably affected by a deficiency of sulphur, a considerable proportion of that element being present as a natural constituent in wool; thus soil containing sulphate of lime is supposed to yield good herbage for sheep. The fact that for 100 pounds of wool fiber there is in fine wools about 5 pounds of sulphur has led authorities to refer to the lack of this substance in the Bengal soil and to dwell on the importance of providing in every available manner a means of supplying food and liquids upon which sheep depend which contain sulphur in a sensible proportion. Much wool has been brought over the mountain passes from Thibet, by way of Darjeeling, into Bengal. The quantity available for export from Thibet is believed to be enormous. Sheep are killed, not for the sake of their hides or fleece, which are practically valueless for want of a market, but in order that their carcasses may be dried into jerked meat, which sell for less than 20 cents each. On the northern plateau, which begins just beyond the Sanpoo or Brahmapootra rivers, are prodigious flocks and herds which roam at will over the endless expanse. A great deal has been said and written about the practicability of increasing the importations from Thibet into Bengal, but beyond this little has been effected.

Owing to the steady extension of cultivation and the corresponding contraction in the area of pasturage, as well as to the closer restrictions in forest grazing, sheep-breeding is necessarily becoming curtailed in many parts of India. In Oudh, for example, although the production of wool in that province was never very extensive, still not so long ago the industry afforded in some places constant work to a considerable number of the inhabitants; but the herdsmen have of late been finding that their occupation is gone, and in consequence have been gradually migrating to fresh fields in Nepaul and eastward.

In Rajpootana sheep and even lambs are shorn in the months of March and April and October and November. The wool obtained in the spring is white; that in the autumn yellowish, owing to its having been worn in the rainy season. Sheep are not dipped before shearing, but those who have charge of the cleaning of the wool tread it repeatedly in soap and water in large pans and squeeze it into balls, which, after drying in the sun, are handed over to an expert to remove with his bow whatever impurities remain.

There is a vast region lying at the base of the Himalayas where sheep are raised more satisfactorily than in most other parts of India, and the superiority of the wool and of the fabric therefrom is generally acknowledged. Here we are met again with the statement that there are three races of sheep in India: (1) the common sheep of the plains, with a very coarse fleece, which has some very good qualities, such as strength and milling properties; (2) the Domba or Karoo, whose wool is mostly white and of very pure description; (3) the Bhyangee, found in the Himalayas, the wool of which is soft

and long in staple, but the milling properties of which are deficient, having more of the fur character than the true spiral wool fiber. It lies more like hair, and has not the serrications which fine wool should possess.

Sheep and goats are almost invariably kept together, and in all reported statistics are classed together. The size of a flock varies very much from fifty to a thousand.

Table showing the number of sheep and goats in each district of the Punjab on March 31, 1890.

District.	Number.	District.	Number.
Delhi:		Lahore:	
Hissar	211,074	Mooltan	459,564
Rohtuk	57,984	Jung	442,001
Goorgaon	142,708	Montgomery	423,930
Delhi	57,045	Lahore	283,649
Kurnaul	102,534	Amritsir	99,679
Umballah	161,799	Goordaspoor	86,343
Simla	5,066	Rawil-Pinde:	
Jullinder:		Sialkot	109,748
Kangra	590,470	Gujerat	107,923
Hoshiarpoor	181,561	Gujurn-walla	199,189
Jullinder	86,270	Shahpoor	323,730
Ludhiana	80,894	Jhylum	303,377
Ferozepoor	195,344	Rawil-Pinde	405,606
Derajat:		Peshawer:	
Bunnoo	135,375	Huzareh	266,712
Dera Ismaeel Khan	368,502	Peshawer	143,687
Dera Ghazee Khan	176,311	Kohat	98,912
Mozuffergurh	244,193	Total	6,551,180

The great drawback to the sheep and wool industry is the carelessness of those engaged in this employment. The wool of most, if not all, sheep being more or less valuable according to the part of the body from which it is taken, the quality growing less fine from the neck to the extremities, the wool at the breech, being coarser than that on the back and sides, is greatly depreciated in value when no attention is paid to the separation of the different qualities and when the fleeces of the black, white, brown, and gray colored sheep are mixed together. When care is taken in regard to this matter, and when pasturage, water, and shelter are provided and all the niceties of manufacturing are observed, a rich reward is the result. As an evidence of the effect of highly developed skill and ceaseless vigilance, although perhaps it is not fair to compare pashm with the wool of the ordinary sheep, it should be stated that shawls weighing not over 7 pounds are sold for $1,500. Of course, those who act intelligently never mix the spring-shorn and the autumn-shorn wool, but select the finest pastures and the purest water, make no sudden change from hay and dry food to green pasturage, protect the animals from rot by avoiding damp pasturage and selecting those pastures which are naturally drained, and provide shelter whenever the animals are disposed to escape from the cold or from storm.

The quality of the wool of the northwest is by no means inferior to that produced in the other parts of India, and many of the articles manufactured therefrom are certainly unsurpassed. Fine blankets, serges, broadcloths, etc., are made under European supervision in Bombay, Cawnpoor, Dárwar, and Bangalore. Wool is carried southward from Cashmere, Beloochistan, and Thibet, and, mingled with that of the Punjab, is made into beautiful shawls, carpets, rugs, felts, blankets, packs for bullocks, saddlecloths, and ropes.

The mountain paths between Rampoor and Spiti are so precipitous that sheep, more sure-footed than larger beasts, are commonly used to carry burdens of from 16 to 20 pounds. The sheep are driven from village to village with the wool still growing, and, as the required quantity is cut from their backs, they are laden with the grain received in exchange, which, when the fleece is all disposed of, is carried into Chinese Tartary and sold at a profitable rate. It is the custom of the shepherds of Chumurti to give an order while the crops are yet green and on the ground for any amount of grain they may require, which, when the crop is ripe, is stored by the cultivator until the summer of the ensuing year. When the shepherd arrives with his flock he gives the wool in exchange and receives his grain, which he puts into small bags, and drives back his flock thus laden. As one approaches Cashmere the number of sheep increases, the quality of the wool improves, and the goods manufactured are perceptibly better.

The Punjab, with its 6,551,180 sheep and its 83,000 maunds of wool annually made into shawls, carpets, blankets, cloths, etc., holds an important place in the sheep and wool industry. Shearing in the Punjab is done twice a year generally, though in a few of the districts there is an intermediate shearing in June. The usual wages is one-twentieth of the wool shorn. A man can shear twenty unwashed and twenty-five washed sheep in a day. In most districts the sheep are washed before shearing, but generally with cold water and in a superficial way. Shearing is done with scissors 8 inches or more in length, and in some places with shears similar to those used in Mysore, and previously described. The weight of the fleece varies from 3 chittaks in the case of inferior plain sheep to 1 seer in Kangra hill sheep. As the Kangra sheep are shorn three times, it may be taken for granted that 3 seers is the very largest annual yield from any sheep in the province. Each fleece when cut is made up into a bundle, and in this state sells at an average rate of 2½ seers per rupee.

Wool-sorting in the Punjab is done in a very primitive style, and, indeed, in some parts it is not done at all. Where done only two qualities are recognized, the better and the worse.

Washing of the wool is not common, nor is it very necessary, except for wool loaded with sticky matter. Unless done carefully and with suitable soap, it is very bad for the wool; and picking by hand or some other process is, in every case, still necessary for the removal of burrs, thorns, seeds, etc., entangled in the fibers.

The picking out by hand of foreign bodies is done everywhere. It is a very tedious process in case of wool grown in tracts abounding in thorny bushes and undergrowth; but none of the other processes avail to remove burrs. The ordinary wages for this and the next process (teasing by hand) are certainly not more than 1 anna a day. The workers are nearly always women.

The mere process of hand-picking involves a certain amount of teasing out of matted portions of wool; but where scutching and combing are uncommon, a state of affairs which appears to exist in the Jung district and in Jullinder and Ludhiana, something more than this must be done. The wool must be reduced by hand to a homogeneous mass of fluff; but to effect this in most districts either the *pinjan* (bowstring) or the comb is used. A bow is suspended, string downwards, at such a height that the string passes through the wool to be operated on. The string is then made to vibrate violently either by twitching it or by striking it with a hammer, and the vibrating string catches up and scatters the wool about. Besides the opening out of the separate fibers, dust and all dirt, not viscous or prickly, are shaken out. The instrument is used in nearly every district of the Punjab, and nearly everywhere the work is done by men of some low caste. In most places there is a separate caste of *pinjas*; but it is also true that in many districts there is no such special caste. The wages vary from half of 1 anna to 1 anna per seer scutched, which certainly does not give more than 2 annas per day. The scutcher is generally a man, but in one or two of the southeastern districts women scutch for themselves with a small *pinjan*.

It must not be supposed that the bowstring and the comb are merely alternative instruments for effecting the same purpose. The former opens out the wool and loosens its mass, but leaves the fibers lying confusedly in all directions; the latter tends to open out the wool, and also to lay fibers side by side in parallel lines. The former is used when woolen thread is wanted, the latter when the spinning of worsted is the object.

The combs used in the Punjab are of two sorts—single and double. The double are reported to be used only in Gujurn-walla, Amritsir, and Lahore; and the single comb is found in Sialkot and Ferozepoor. The double comb (*shana kanga*), which is the more effective of the two, consists of a piece of wood laid on the ground, with two parallel rows of vertical iron teeth standing on it, there being twenty teeth about 4 inches high, and the intervals between the two rows and between the teeth being 1 inch and one-half of an inch, respectively. The teeth are rigidly fixed to the platform, which is kept steady by the operator's feet. He does the combing by taking a flock of wool, striking it upon the teeth, and drawing it gently downwards through the teeth at right angles to the rows. Before combing, the wool is teased in the fingers, and sometimes, though not often, it is scutched. It will now be clear that combing is an addition to, and is by no means a substitute for, the mutually similar process of teasing and scutching. The single comb is a very primitive instrument, and has very imperfect

effects. In its rudest form it is a mere *panja*, or claw, which cleans rather than combs, though it does comb to some degree. The wages of a comber who combs out 4 seers per day do not exceed 2 annas. Neither the single nor the double instrument is used for combing short-stapled wool, nor could it be employed with any effect for such a purpose. The people do not seem to have discovered how much easier a comb is to work with when heated than when cold. The wool, when teased or scutched or combed, as the case may be, is made up into balls (*punis*).

The next operation is spinning. The *charkhi* is formed of two parallel discs, the circumferences of which are connected by threads, and over the drum so formed passes a driving band, also made of thread, which communicates a rapid motion to the axis of the spindle. The end of a *puni* is presented to the point of the spindle, which seizes the fiber and spins a thread, the *puni* being drawn away, as the thread forms, as far as the spinner's arm will reach. Then the thread is slackened and allowed to coil itself on the body of the spindle until the spindle is full, when it is removed. But in some parts, notably Cooloo, the *charkhi* is quite unknown, and the instrument used is the *dherna*, or *takli*, a pointed instrument similar to the unattached spindle of an old-fashioned American spinning wheel, with a disc at the blunt end. A portion of a *puni* is drawn out and held to the upper point of the instrument and wound round it. The *dherna* is then spun round in the hand, and when it has got firm hold of the wool it is allowed to hang in the air suspended by the thread it is spinning, the right hand of the operator keeping up the rotatory motion, while the left hand regulates the draft of the wool. When the thread is getting so long as to put the *dherna* out of reach or to let it touch the ground, the draft of wool from the *puni* is stopped, and the piece that has been spun is wound on the *dherna*. The *charkhi* is said to produce a more even and reliable thread than the *dherna;* and this can be readily understood to arise from the superior regularity of the rotatory motion in the former machine.

In the hills spinning is done by all classes of both sexes and all ages, from ten years and upwards. In Cooloo, for instance, every tenth person one meets on the road is spinning wool with a *takli* as he or she walks along; and it is no doubt the portability of the instrument as much as anything else that causes it to be used instead of the *charkhi*. In the plains, while women of all the poorer classes spin wool in their leisure moments for blankets, etc., to be made for the household, we find here and there classes of persons who do spinning regularly for pay. Their wages are miserably low, as a comparison of the prices of scutched wool and yarn will show. To take the figures for the Kangra district, scutched wool of the quality that sells at 7 annas a seer produces yarn that sells at 9 annas a seer; and the spinning of a seer certainly occupies three days. In Kurnool and some other districts the wages are as low as 1 to 1½ annas per seer.

When yarn has been spun it is generally found that it is too thin in places to bear the strain of weaving or when a coarse, thick fabric is wanted. The

yarn has therefore to be doubled or trebled, and sometimes more than three folds are given. For twisting, as this process is called, the *charkhi* can be used, and also a form (called *masan*) of the *dherna* or *takli*; the difference being that the upper end of the spindle has a narrow, curved groove, about half an inch long, running from the point along and round the rod, and in this groove the threads, twisted together, are run.

Yarn, single or double, is sold (in the hills) in balls or on reels of various shapes, but before weaving it must be wound on reels and the warp prepared. Two reels are fixed at the ends of sticks on a pivot on which they can revolve. A double row of sticks or reels is then planted on the ground at intervals of about 2 yards, extending either in a straight line or in a loop, to the length which the piece of cloth is to have. The warp-layer then takes a stick and reels in each hand and walks along the line, dropping the threads, one inside and the other outside the upright sticks alternately, so that the two cross each other between each pair. Having got to the end of the line, she returns in the same way, and so on, up and down, until enough threads have been laid to make the required width of the fabric. If the cloth is to have a longitudinal stripe or a check, reels of different colors must be used, and the proper number of threads must be laid with each color.

The method of weaving is similar to that described in the first part of this report. The loom, too, is similar to the Mysore loom, except that it has more resemblance to the old-fashioned American hand loom than is to be found in the southern India machine.

Some of the wool used in the Punjab is brought from the Beloochistan, where the pasturage is peculiar, and from Cashmere, where the water is said to contain valuable qualities. One of the striking features of the Beloochistan flora is the prevalence of *Cruciferæ* and of astragalus, a genus of *Leguminosæ*. From this may be inferred the explanation of the superior quality of the sheep and goats of Shawl, the plants belonging to these families being among the most nutritious of fodders.

Thousands of Cashmeres in the last fifty years have come over from their native valley to settle in the Punjab, and, pecuniarily encouraged by European agents, have engaged in the manufacture of shawls. None, however, but the poorest artisans, who possess the least artistic qualifications and who fail to get a livelihood in their own country, would consent to leave the charming vale of Cashmere for the heats of the Punjab and the discomforts of a strange country. When their attention is called to the inferiority of their shawls they exclaim, "There is no water like the River Jhylum," and ascribe the superiority of the shawls of the valley to the virtue of the waters of that river.

The limitations of the subject do not permit the writer to describe the method pursued in raising goats in Cashmere and the manner in which the world-renowned pashmina shawls are made.

Table showing the wool exports to the United Kingdom and other countries from British India during the fiscal years ended March 31, 1889, 1890, 1891, and the first four months of 1891–'92.

Year.	United Kingdom.		Other countries.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Pounds.	*Rupees.*	*Pounds.*	*Rupees.*	*Pounds.*	*Rupees.*
1888–'89	21,590,027	9,509,812	370,821	177,717	21,960,848	9,687,529
1889–'90	23,202,124	10,571,863	668,108	284,504	23,870,232	10,856,367
1890–'91	20,945,851	9,453,962	398,992	229,261	21,344,843	9,683,223
1891–'92 (first 4 months)	8,270,822	3,705,114	365,125	161,384	8,635,947	3,866,498

Table showing the woolen goods exported from British India to the countries named during the fiscal years ended March 31, 1889, 1890, 1891, and the first four months of 1891–'92.

Countries.	Shawls.		Other sorts.		
	Quantity.	Value.	Quantity.		Value.
1888–'89.	*Number.*	*Rupees.*	*Yards.*	*Pounds.*	*Rupees.*
United Kingdom	3,892	101,953	14,651	561,947	774,101
France	297	10,243	.....	6,196	13,044
Persia	1,026	98,820	.....	.....	.....
Other countries	2,929	54,995	181,364	123,510	167,893
Total	8,144	266,011	196,015	691,653	955,038
1889–'90.					
United Kingdom	4,394	162,351	11,914	670,445	795,859
France	24	1,120	341	7,889	10,523
Persia	896	110,381	.....	.....	.....
Other countries	1,938	28,619	195,528	73,029	149,159
Total	7,252	302,471	207,783	751,363	955,541
1890–'91.					
United Kingdom	2,150	70,201	1,034	472,957	627,916
France	34	710	32	12,086	21,082
Persia	1,154	151,080	.....	.....	.....
Other countries	1,242	21,725	221,480	68,796	148,950
Total	4,580	243,716	222,546	553,839	797,948
1891–'92 (first 4 months).					
United Kingdom	926	22,785	730	137,709	199,703
France	.....	.....	.....	1,129	2,903
Persia	351	25,960	.....	.....	.....
Other countries	389	4,700	114,888	72,059	88,568
Total	1,666	53,445	115,618	210,897	291,174

SAMUEL MERRILL,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Calcutta, September 30, 1891.

AMERICAN INTEREST IN COLOMBIA.

REPORT BY CONSUL CROFT, OF CARTAGENA.

Interest in Colombia as a promising field for commercial enterprise was certainly stimulated by the Pan-American Congress. The constantly increasing demand from the United States upon this consulate for specific information concerning matters discussed by that body is a gratifying evidence of the wide growth of this interest. The reports of the Colombian delegates to that congress have attracted marked attention, and indications point to an increased volume of trade between this country and our own.

As Cartagena necessarily enters as an important factor into the conduct of Colombia's foreign trade, the following will be of interest to the mercantile communities of the United States: During the Spanish occupancy of this country nine-tenths of its commerce passed through Cartagena. Connection with the interior was maintained by the *dique*, a water way extending from Cartagena Bay to the Magdalena River, the great commercial artery of the interior. In course of time and by reason of neglect the *dique* became too shallow for transportation service, and commerce was forced to seek a new channel. The spacious land-locked and secure harbor of Cartagena was partially abandoned for the open and dangerous roadstead of Sabanilla, with the result of materially increasing the cost of transportation.

The manifestly superior advantages of Cartagena harbor and the necessity of accommodating increasing foreign trade determined the Colombian Government to establish a more reliable means of interior communication than the *dique* afforded. Liberal concessions were granted for the construction of a railroad between Cartagena and the Magdalena River, and the Cartagena Terminal and Improvement Company, an American corporation, was formed, and is now vigorously prosecuting this work. As this road insures rapid and reliable transit to and from the interior and will replace the existing slow and expensive system of lighterage by commodious wharfs, it is safe to conclude that most of the commerce previously diverted will return to Cartagena.

This railroad is not the only evidence of American enterprise and investment here. An American company has a concession for sinking artesian wells, and work has been commenced. Another company is putting up an electric plant, and another has just completed and launched a fine steamboat. A machine shop and marine ways have been erected, and other works are under consideration. The outlook is of the most promising character, and, if American merchants and manufacturers will give impetus to the movement already commenced, there can be no doubt of the most satisfactory results.

It is a noticeable fact that but few representatives of American houses are sent to this country. While it is true that inadequate means of transpor-

tation in the interior make traveling with sample cases tedious and expensive, yet the method of solicitation appears to yield remunerative returns. Almost every steamer from Europe brings drummers with full lines of samples. These men are intelligent, active, and energetic, and canvass the entire country. I have met a large number of them, and their universal testimony is that business is good. I regret to say that since I have held the office of consul here I have met but two men representing American houses. One was a vender of patent medicines; the other represented a leather house.

There is another method that might be adopted with good effect and at much less expense—the establishment at Cartagena of a permanent exhibit of American products and industries. This idea was suggested by the success of a small exposition which was held here about two years ago. Although that was the initial step in industrial displays, the season bad, and the foreign exhibit limited, the attendence was good and the sales very satisfactory.

This city is constantly visited by the merchants of the interior, who come to purchase stock and supplies and to settle with their agents. They would be much more likely to buy from samples than from catalogues, however attractive the latter may be in appearance or elaborate in description.

It is quite safe to say that fifty or more American merchants and manufacturers combined could establish an attractive exhibit at an annual expense not to exceed $250 each. This outlay would cover the cost of rent and arrangement of the house, the freight and duty on samples, pay of clerks and labor, distribution of printed matter and advertisements, etc.

The accompanying list, made up from reports of the imports of this country, suggests the articles of American productions which could find increased sales here.

Comestibles.—Barley, biscuits (in tin cases of from 1 to 5 pounds), cheese, condensed milk, confectionery, corn, crackers and hard bread in cases, flour in half barrels and 100-pound sacks, hams (medium size), onions, pickles in glass jars, canned beef (1-pound packages preferred), rice, and salted meat.

Drugs and medicines.—Caustic soda, Florida water, lubricating oil, paints, perfumery, poison for hides, soap (toilet), varnish, white lead, yellow ocher, etc.

Glassware and crockery.—Bottles, demijohns, lanterns, lamps and chimneys, and mirrors.

Iron and steel.—Anchors, anvils, axes (best quality), bolts, chains, copying presses (letter size), cutlery, files, firearms, flatirons, hinges, locks, machetes, nails, picks, safes (small and medium sizes), scales, hardware, sewing machines, shovels, carpenters' and blacksmiths' tools, and wire fencing.

Miscellaneous.—Harness, saddlery, leather, baskets (for market and office use), blacking, brooms, brushes, carriages and carts, cement, cordage, rope, kitchen utensils, printers' ink, rosin, vegetables, seeds, slates and pencils, tallow, tar and pitch, velocipedes, wheelbarrows (strong), pianos, organs,

band instruments, blank books (full assortments and grade, etc.), cigarette paper, envelopes, music, printing paper, sandpaper, wall paper, wrapping paper, writing paper, paper bags, furniture (light and inexpensive, without glue), artists' materials, moldings and frames.

This list can be largely extended, but it is deemed sufficient to indicate the basis of an exhibit.

C. I. CROFT,
Consul.

UNITED STATES CONSULATE,
Cartagena, September 9, 1891.

COMMERCE OF RIO GRANDE DO SUL.

REPORT BY CONSUL NEGLEY.

Brazil has never enjoyed the advantages of a statistical bureau, and, though efforts are being made to organize one under the present Government, it is safe to say that some years will necessarily elapse before such a department can get into good running order. In the meantime the seeker after knowledge is obliged to rely upon such meager and difficult sources of information, official and otherwise, as he may command.

The compilation of the custom-house returns are always much delayed, so that it is impossible to obtain them within six months after the close of the year, and sometimes only after a longer period.

The following review of the commerce of Rio Grande do Sul is necessarily confined to that which passes through the custom-house of the city of Rio Grande do Sul, as, up to the present time, I have not been able to secure the returns from the custom-houses of Pelotas, Porto Alegre, and other smaller places in the State. But the port of Rio Grande do Sul, owing to its proximity to the sea and the greater depth of its waters, is the most important of them all. Through its custom-house, said to be the finest in Brazil, are dispatched many of the goods destined for Pelotas and Porto Alegre, both approachable from the sea, though by vessels of less draft, and both having custom-houses of their own. The leading import and export houses of the State have their head offices in this city. Here, of a certainty, are made up the invoices for all the exports to the United States, and presumably such is the case—to a large extent at least—with exports to other foreign countries. Thus the tables of imports and exports for the years 1889 and 1890, accompanying this report, in giving the commerce of this port, also furnish in a comparative way a reasonably accurate estimate of the entire commerce of the State for these two years.

BALANCE OF TRADE.

The total imports during the year 1889 were $4,188,959.84 and the exports $369,869.36, being an excess of imports during the year of $3,819,070.48; in 1890 the imports were $6,276,510 and the exports $495,451.91,

being an excess of imports of $5,781,058.09. There is here an apparently heavy balance of trade against the State, which is real, so far as its foreign trade is concerned, though not to the extent indicated by the custom-house figures, for a large part of the exports to foreign countries goes from here to Rio de Janeiro in steamers, where it is transshipped to vessels which take it abroad. Such exports must be considered by the custom-house here as shipped to a Brazilian port, as only in this way can the great discrepancy be accounted for between the custom-house figures of the exports to the United States and the record of the certified invoices kept at this consulate, reference to which will be made later on. The great bulk of the exports from this State are domestic, that is, they go to the northern part of Brazil, and consist of *charca* (sun-dried beef), *milho* (Indian corn), farinha de mandioca, lard, and vegetables.

INCREASE OF IMPORTS.

It will be noticed that the imports for 1890 represent an increase of about 50 per cent over those of 1889. This is quite an exceptional increase, and is to be explained mainly by the fact of an increase of duties on and after January 1, 1891. Up to that time this State had enjoyed a special tariff—very low as compared with the rest of the country—in order that the merchant doing a legitimate business in the principal seaport cities of the State might successfully compete with the large contraband trade coming over the borders from Uruguay. In addition to this special tariff, a limited territory within which goods could be sold by merchants residing and doing business in the frontier towns was marked out, each town being entitled, according to its size, to a certain fiscal zone (so called). The present Government, by a decree which went into effect January 1, 1891, abolished the special tariff and established in its place the tariff common to the rest of the country. It is also proposed to do away with the fiscal zones, and in place of them to institute stringent measures for the suppression of the contraband trade. Besides the promulgation of a new and higher tariff on and after January 1, 1891, the duties were made payable in gold. As exchange has been going down for the past two years, this was equivalent to a still greater increase of duties. For the past few months the Government has been selling gold to merchants for the dispatch of their goods at 20*d.* to the milreis, the current rate of exchange at this writing being 15¼*d.* When the decree was issued raising the special tariff to the level of the general tariff and making duties payable in gold, the same thing occurred here in a small way which took place in the United States previous to the date upon which the new tariff bill went into effect. Heavy orders for goods were rushed through, so that for weeks after January 1, 1891, the principal custom-houses of this State were glutted with undispatched merchandise, which had arrived just before that date in order to avoid the increased duties.

Increase of trade will account for a portion of the increase of imports for 1890, as the exports for that year increased 33 per cent over those of 1889;

but, as the imports for 1890 increased 50 per cent over those of the previous year, 17 per cent of the increase may be accredited to the forestalling of the advance in duties.

FOREIGN TRADE ACCORDING TO NATIONALITIES.

The following table gives the foreign trade of this State according to nationalities:

Countries.	1889.			
	Imports.	Exports.	Total.	Per cent.
Great Britain	$1,173,756.96	$149,021.73	$1,322,778.69	29
Germany	1,145,015.46	61,946.15	1,206,961.61	26.4
Uruguay	493,610.76	18,335.62	511,946.38	11.2
United States	398,761.92	98,511.72	497,273.64	10.9
France	358,470.90	618.84	359,089.74	7.8
Portugal	269,748.90	.....	269,748.90	5.9
Spain	137,357.10	.....	137,357.10	3
Belgium	117,992.70	22,980.86	140,973.56	3
Italy	61,175.52	17,881.41	79,056.93	1.7
Argentine Republic	11,521.44	573.03	12,094.47	0.2
Holland	7,313.22	.....	7,313.22	0.1
Austria	14,214.96	.....	14,214.96	0.3
Total	4,188,939.84	369,869.36	4,558,809.20	.....

Countries.	1890.			
	Imports.	Exports.	Total.	Per cent.
Great Britain	$1,916,346.60	$348,078.22	$2,264,424.82	33.4
Germany	1,743,978.15	41,295.14	1,785,273.29	26.3
Uruguay	1,315,535.40	15,410.70	1,330,946.10	19.6
United States	337,570.65	46,483.45	384,054.10	5.6
France	370,633.95	126.45	370,760.40	5.5
Portugal	228,141.45	8,656.69	236,798.14	3.5
Spain	121,853.70	.....	121,853.70	1.8
Belgium	123,439.95	19,433.91	142,873.86	2.1
Italy	75,318.30	15,882.30	91,200.60	1.3
Argentine Republic	30,635.10	85.05	30,720.15	0.5
Holland	6,668.10	.....	6,668.10	.....
Austria	4,986.45	.....	4,986.45	.....
Norway and Sweden	1,402.20	.....	1,402.20	.....
Total	6,276,510.00	495,451.91	6,771,961.91	.....

Comparing the percentages of the total volume of trade, it will be seen that Great Britain here, as almost everywhere else, leads the world in her foreign trade. She had 29 per cent of the total volume of trade in 1889, while in 1890 she had 33.4 per cent, an increase of 4.4 per cent. In 1889 Germany had 26.4 per cent, and about the same in 1890. Uruguay increased from 11.2 per cent to 19.6 per cent. The United States decreased from 10.9 per cent in 1889 to 5.6 per cent in 1890, a loss of 5.3 per cent of the total, according to the custom-house figures. Comparing each country's imports in 1890 with its own imports of the preceding year, England in-

creased hers by 63 per cent, Germany by about 51 per cent, Uruguay by 1.66 per cent, France by 3 per cent, Belgium by about 4 per cent, Italy by about 23 per cent, and the Argentine Republic by 1.65 per cent; while the imports from the United States decreased by about 15 per cent, from Portugal by about 15 per cent, and from Spain by about 11 per cent. In exports all the countries decreased except England, which increased about 75 per cent.

MISLEADING RETURNS.

It is well known that the custom-house returns do not, as a rule, give a correct estimate of the amount of goods really imported from any given country, that is to say, the country of the origin of goods is not indicated, but only the country from which they come, which may or may not be the country of their origin. Thus it is perfectly certain that a large proportion of the imports accredited to Uruguay have their origin in Europe, and some in the United States. For instance, kerosene and lubricating oils come here from Montevideo, which must have had their origin in the United States. In fact, the exceptional increase of imports from Uruguay may be attributed to the fact that, to forestall the increase of duties, it was, in many cases, necessary to order the goods from some point near at hand, so that they might get through in time, and they were therefore ordered from Uruguay. The increase is mainly under the classes of cotton, wool, hemp, and silk, which include the goods manufactured from these products, none of which are manufactured in that country. It is also well known that many of the goods accredited to Germany are bought by wholesale merchants of Hamburg in London and elsewhere and then shipped here. So, also, many things accredited to England and Germany come via those countries from the United States.

The figures in regard to exports are equally misleading, as will appear by the following table of the certified invoices of exports to the United States for the calendar years 1889 and 1890:

Articles.	1889.		1890.	
	Quantity.	Value.	Quantity.	Value.
Hides.....number...	138,781	$316,631.53	157,295	$223,129.76
Hair.....kilograms...	392,849	166,873.09	328,907	147,311.05
Wool.....do.....	223,268	50,158.22	120,650	37,725.60
Hide cuttings.....do.....	73,234	3,517.21	133,851	5,053.68
Sounds (fish).....do.....	.....	.....	8,124	3,731.81
Glue stock.....do.....	7,817	819.43	40,581	5,531.19
Hides (in bales).....do.....	.....	.....	4,429	319.40
Horn piths.....number...	.....	.....	13,600	225.24
Horns.....do.....	5,390	198.52	5,345	173.75
Glue.....kilograms...	.....	.....	1,276	123.39
Shin bones.....number...	197,240	106.51	.....	.....
Total.....	.....	538,304.51	.....	423,324.87

The discrepancy between the amount of exports to the United States as given by the custom-house returns and the consular certificates can only be explained in the way previously mentioned. It is true the official valuation by the custom-house may be lower than the certified valuation, which would account in part for the difference.

Misleading as are the custom-house returns in many instances, still, in the main, we must rely upon them for what information we get in regard to the commerce of a place.

INCREASE AND DECREASE OF IMPORTS.

If we look at the increase and decrease of imports by classes in 1890, as compared with 1889, we find that England increased her imports chiefly in leather, beverages, pharmaceutical goods, cotton and woolen goods, iron and steel, and machinery. Her imports of cotton and woolen fabrics just about doubled those of the preceding year. Germany increased her imports chiefly in leather, beverages, pharmaceutical goods; cotton, woolen, and silk goods; minerals, china, copper goods, arms, cutlery, instruments of music, and machinery. Her imports of cotton goods doubled and woolen goods nearly doubled. Uruguay more than trebled her imports of cottons, while her imports of wool and its manufactures increased more than six times over those of the preceding year, with a corresponding increase in the other classes of manufactured goods, to be explained as before described. With regard to wool, however, it must be added that there is a manufactory here of woolen and cotton goods, which is using an annually increasing amount of wool imported from Uruguay, which would come under class 16.

When we come to the United States we find an extraordinary decrease in class 7, the chief article of which from the United States is flour. Some cornstarch and, perhaps, a few other articles are included in this class from the United States, but flour probably constitutes nine-tenths at least of the total amount. It will be seen that imports under this class dropped from $172,785.42 in 1889 to $76,999.50 in 1890, a falling off of about $100,000, or over one-half in one year. This is to be largely explained by the inroads made upon the flour trade of the United States by flour brought from Rio de Janeiro and the River Plate, though there was a decline in the total flour trade that year. In 1890 the Rio de Janeiro mills put their flour down very low and shut out, to a large extent, imports from the United States; in fact, they sold flour so low that, I am told on good authority, the statement of one of the two large mills there shows a loss of about $40,000 for the year 1890. However that may be, it is certain those mills largely increased their sales here, and, what is more, cereals and flour from the River Plate nearly trebled in value; so that, between the two, our treaty of reciprocity did not come too soon for the health of the United States flour trade in Rio Grande do Sul and in Brazil generally. During the year 1890 wheat to the amount of 1,324 tons was imported into this State from Rosario, Argentine Republic, for the use of a flour mill located at Pelotas. No wheat came

here during 1889 and 1890 from the United States. The flour which comes from the Rio de Janeiro mills is made from a mixture of United States, Austrian, and River Plate wheat. The River Plate wheat is said not to make a good quality of flour. The bread made from it, for some reason, does not rise like that made from the flour of North American or European wheat.

It is thought by competent judges that, with the removal of the duty on flour from the United States under the recent commercial arrangement, it is only a question of time for the closing down of the two large flour mills at Rio de Janeiro and the small one at Pelotas, in this State. It is believed they will not be able to stand the competition.

FLOUR IMPORTS.

The following table, kindly furnished me by Mr. Federssen, manager of the American house of Thomson & Co., in this city, the leading importers of flour in the State, gives the total amount of flour in bags and barrels imported into the State of Rio Grande do Sul during the years 1889 and 1890:

Whence imported.	1889.		1890.	
	Barrels.	Quarter bags.	Barrels.	Quarter bags.
United States	56,389	19,000	41,815	4,000
Coastwise	17,071	170,716	11,645	141,382
River Plate	1,000	12,460	.....	39,768
Europe	3,154	800	300	.....

A Brazilian bag holds only half as much as an American bag, and the half bag, of course, only one-fourth of an American bag. The importations by bags have therefore been reduced to quarter bags, which hold just one-fourth of a barrel of flour. Reducing the flour in bags to barrels, the above table will stand as follows:

Whence imported.	1889.	1890.
	Barrels.	*Barrels.*
United States	61,139	42,815
Coastwise	59,750	46,990
River Plate	4,120	9,942
Europe	3,354	300
Total	128,363	100,047

It will thus be seen that in 1889 the United States furnished about 47 per cent of the total amount of flour to this State and in 1890 about 45 per cent, a decrease of 2 per cent. From this it would appear that the falling off was not so great for the State as for this port, even after due allowance for other articles included in class 7 of the custom-house returns. The decline, however, is sufficiently marked to attract attention, especially when it is noted that the imports from the River Plate more than doubled in one year.

IMPORTS OF COTTON GOODS.

Referring once more to the custom-house returns, we find that the imports of cotton goods from the United States increased from $89,690.76 in 1889 to $108,764.55 in 1890, an increase of over 20 per cent, which is quite satisfactory. Still, the United States does not occupy the place it would in the cotton-goods trade if our merchants and manufacturers availed themselves of the grand opportunity offered by the recent commercial arrangement for the introduction of our prints and other cotton fabrics. While the American prints have long been conceded to be superior to the English, they have been heretofore more expensive; but now, with a discount of 25 per cent on the duties, they are, if not as cheap, certainly not much above the English prints in price, and might easily be made lower. The trouble with our manufacturers is, they do not take the pains to find out what is necessary for them to do in order to compete with the Europeans in the export trade.

The American prints are made for the home market, where weight is doubtless desirable; but here duties are paid on these goods according to weight, and the consequence is that the English prints, which are made especially for export, are much lighter and come in at a greatly reduced rate. So, with a discount of 25 per cent in duties, if we do not take the lead in this line it will be our own fault. The entire class of cotton goods is certainly one that merits the attention of the United States merchant and manufacturer. Cotton is the largest class of all the imports, and runs into the millions of dollars for this State alone.

IRON AND STEEL.

In iron and steel we compare unfavorably with England and Germany; even France is ahead of us. In class 34 (machinery, etc.) we do fairly well and show a satisfactory increase. At the present time there is a United States vessel in port unloading six Baldwin locomotives, having previously unloaded two at Paysandu for the Uruguayana end of the Government railroad being built from Bage and Santa Maria to Uruguayana; but all the iron, including rails and bridges, comes from Antwerp and is furnished by English contractors.

HOW EUROPEAN TRADE IS WORKED.

The English, Germans, and other foreigners spend a great deal of money to learn just what their customers desire. An instance in point occurred here a short time ago. The senior partner of an exporting house in London, which has the agency for half a dozen of the largest boot and shoe factories in England, arrived in Rio Grande do Sul several months ago. He brought with him over one thousand different samples of boots and shoes made especially for the Brazilian trade. Very few of these styles could be sold anywhere else, certainly not in England. These patterns were the result of previous trips, during which this gentleman had picked up and sent home the styles that were preferred in the country. Now they have an enormous trade

in Brazil. The tariff on these goods is very high, but it can not keep out their boots and shoes. When he arrived here on this trip he rented a room on the principal street of the city and invited his customers and the trade to come and view his samples. He did not attempt to take any orders; in fact, he refused them, but naturally his customers and others made up orders from this magnificent sample lot and sent them through their regular channels of business. Eventually these orders are bound to reach factories of which this gentleman is the representative, and he will get his regular commission. So completely have they mastered the requirements and details of the trade that they can afford—and it pays them—to proceed in the manner I have indicated. This is only one instance of the care taken by the English and other European nations to cater to the tastes and needs of their customers.

NAVIGATION.

One vessel called an American cleared from this port last year, but that vessel did not belong to the United States. Not a single vessel flying the United States flag entered or cleared this port during the year 1890. This year we are doing a little better, up to date two having put in an appearance.

THE OUTLOOK.

Were it not for the bad financial condition which Brazil, like so many other South American republics, has managed to get herself into, I see no reason why the outlook should not be full of encouragement. As it is, however, such is not the case. With her wide territory, richly dowered by nature, waiting for development; with a tide of immigration setting toward her shores; with bountiful crops of some of the costliest articles of commerce; with an enlightened form of government, the chief apparent cause that has hindered Brazil from entering upon a new era of progress and prosperity is the folly which has permitted the new system of banks to flood the country with a vast volume of practically irredeemable paper money. Two years ago the paper milreis stood at par, or the equivalent of 54 cents in American gold; to-day the milreis is worth but 30 cents. The last year especially has witnessed a steady and rapid decline in its value. Cheap paper money has caused an unnatural fluctuation of exchange, and is sapping credit at home and abroad; it is paralyzing legitimate business and stimulating an unhealthy growth of companies organized for all sorts of imaginary enterprises; it will sooner or later, unless radical measures are taken to remedy the evil, bring the country to financial ruin.

CUSTOM-HOUSE RETURNS.

The following tables give the custom-house returns heretofore referred to. The par of exchange in United States currency for a milreis is 54.6 cents. The rate of exchange for the year 1889 was about par, and accordingly the milreis have been converted into United States currency at 54 cents to the milreis for that year. The rate of exchange for 1890 was, on an aver-

age, 45 cents to the milreis, at which rate the milreis have been converted for the year 1890.

Table showing imports entered for consumption at Rio Grande do Sul during the years 1889 and 1890.

Classes of the tariff.	Great Britain.		Germany.	
	1889.	1890.	1889.	1890.
2. Hair, fur, and feathers	$71.28	$494.55	$5,787.72	$13,784.85
3. Skins and hides (dressed or tanned in leather).	44,753.58	79,934.40	41,119.38	61,157.25
4. Flesh, fish, oleaginous materials, and other animal products	4,564.08	5,055.75	27,696.06	21,337.65
5. Ivory, mother-of-pearl, turtle shell, and other animal shells	589.68	809.55	4,751.46	8,770.95
6. Fruits	618.30	1,173.15	740.34	438.30
7. Vegetables, farinaceous products, and cereals	24,039.18	27,664.20	68,788.98	50,126.85
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices	16,361.46	17,028.45	16,047.72	12,141.90
9. Vegetable or other juices and alcoholic, fermented, and other liquids	11,056.50	22,392.00	33,235.38	50,491.80
10. Materials or substances for perfumery, dyes, paints, and other uses	20,380.68	19,223.55	29,767.50	35,824.50
11. Chemical products, pharmaceutical compositions, and medicines in general	52,564.68	64,132.65	16,348.50	26,614.35
12. Woods	700.92	895.50	8,564.40	8,404.65
13. Indian cane, bamboo, split cane, rattan, osier, and other reeds	204.12	124.20	728.46	828.90
14. Straw, esparto grass, cocoanut fiber, aloe, piassava, vegetable silk, and other fibers	2,483.46	2,628.90	6,164.10	4,680.45
15. Cotton	519,598.80	1,081,115.10	296,778.60	611,388.00
16. Wool	114,819.66	226,904.40	236,467.62	392,504.40
17. Hemp	53,992.98	30,987.00	43,808.04	35,779.95
18. Silk	6,839.10	8,626.50	41,657.22	62,898.75
19. Paper and its manufactures	4,469.04	3,395.70	37,346.94	38,670.30
20. Stones, earths, and other minerals	155,898.00	132,950.25	18,050.58	37,106.10
21. China, earthen, and glass wares	12,026.34	10,074.15	28,408.86	32,636.70
22. Gold, silver, and platinum			1,055.16	1,386.00
23. Copper and its alloys	5,039.28	7,889.40	8,392.68	15,685.65
24. Lead, pewter, zinc, and their alloys	6,401.16	3,478.05	2,285.28	1,402.65
25. Iron and steel	73,141.92	122,399.50	71,040.78	71,905.50
26. Metalloids and other metals	1,612.98	333.00	289.44	180.90
27. Arms and armaments, ammunition, and war material	2,754.00	2,350.80	4,236.30	17,045.10
28. Cutlery	3,294.00	5,086.80	3,873.42	7,434.00
29. Watches and clocks	27.00	73.80	273.78	392.40
30. Coach-makers' material	648.00		1,272.78	487.35
31. Mathematical, physical, chemical, and optical objects and instruments	1,823.58	870.75	1,425.06	1,576.80
32. Surgical instruments and objects	1,635.66	1,420.65	2,003.40	1,275.30
33. Instruments of music and their belongings	2,980.80	3.15	5,002.56	14,013.00
34. Machinery, implements, tools, and other utensils	21,123.72	31,826.70	15,684.84	21,827.70
35. Other objects	7,243.02	5,004.00	65,922.12	83,779.20
Total	1,173,756.96	1,916,346.60	1,145,015.46	1,743,978.15

Table showing imports entered for consumption at Rio Grande do Sul, etc.—Continued.

Classes of the tariff.	Uruguay.		United States.	
	1889.	1890.	1889.	1890.
1. Live and stuffed animals	.....	$69.75	.....	.....
2. Hair, fur, and feathers	$434.70	357.75	$73.44	$53.55
3. Skins and hides (dressed or tanned in leather).	46,778.04	61,816.05	.....	218.79
4. Flesh, fish, oleaginous materials, and other animal products	12,799.08	25,615.35	1,005.48	3,676.95
5. Ivory, mother-of-pearl, turtle shell, and other animal shells	423.36	2,480.40	157.68	10.80
6. Fruits	4,413.96	4,266.45	48.60	408.60
7. Vegetables, farinaceous products, and cereals	31,214.16	19,975.95	172,785.42	76,999.50
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices	18,941.58	54,842.85	475.74	88.65
9. Vegetable or other juices and alchoholic, fermented, and other liquids	23,864.22	37,079.55	15,695.64	12,088.35
10. Materials or substances for perfumery, dyes, paints, and other uses	10,742.76	3,403.80	92,565.72	92,916.45
11. Chemical products, pharmaceutical compositions, and medicines in general	4,615.38	3,595.05	1,614.06	2,256.30
12. Woods	2,060.10	1,575.90	662.04	1,486.80
13. Indian cane, bamboo, split cane, rattan, osier, and other reeds	.....	58.50	.....	.....
14. Straw, esparto grass, cocoanut fiber, aloe, piassava, vegetable silk, and other fibers	638.82	2,856.60	180.36	1,220.85
15. Cotton	226,446.30	773,021.25	89,690.76	108,764.55
16. Wool	59,245.56	214,583.40	.....	.....
17. Hemp	15,696.72	61,401.15	.....	984.15
18. Silk	8,850.60	14,273.55	.....	.....
19. Paper and its manufactures	2,992.14	2,245.95	667.44	2,037.15
20. Stones, earths, and other minerals	2,349.00	3,200.85	32.40	22.50
21. China, earthen, and glass wares.	1,304.10	1,206.90	1,603.80	841.05
23. Copper and its alloys	1,288.44	1,395.00	1,098.36	458.55
24. Lead, pewter, zinc, and their alloys	7.02	61.65	.....	238.50
25. Iron and steel.	8,110.26	4,425.75	2,263.68	3,452.40
26. Metalloids and other metals	.....	.....	1.62	.....
27. Arms and armaments, ammunition, and war material	31.86	118.80	489.24	254.25
28. Cutlery	165.24	594.00	129.06	200.70
29. Watches and clocks	.....	.....	2,047.68	2,307.60
30. Coach-makers' material	.....	.....	252.72	1,235.70
31. Mathematical, physical, chemical, and optical objects and instruments	217.08	203.75	1,387.80	49.95
32. Surgical instruments and objects	.....	.....	673.92	591.30
33. Instruments of music and their belongings	920.16	2,387.25	174.42	80.10
34. Machinery, implements, tools, and other utensils	2,641.68	3,339.90	10,315.62	15,097.95
35. Other objects	6,418.44	15,082.20	2,669.22	9,528.75
Total	493,610.76	1,315,535.40	398,761.92	337,570.65

Table showing imports entered for consumption at Rio Grande do Sul, etc.—Continued.

Classes of the tariff.	France.		Portugal.	
	1889.	1890.	1889.	1890.
1. Live and stuffed animals	.....	.....	$10.80	.....
2. Hair, fur, and feathers	$1,912.68	$1,895.85	37.80	.....
3. Skins and hides (dressed or tanned in leather).	26,386.56	27,562.50	777.60	.....
4. Flesh, fish, oleaginous materials, and other animal products	58,767.66	61,121.25	11,516.04	$12,801.60
5. Ivory, mother-of-pearl, turtle shell, and other animal shells	4,444.74	3,537.45	1.08	.....
6. Fruits	4,956.12	5,084.55	13,462.20	9,054.90
7. Vegetables, farinaceous products, and cereals	2,129.22	2,641.50	2,564.46	561.60
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices	8,468.28	4,777.65	3,513.24	2,761.65
9. Vegetable or other juices and alcoholic, fermented, and other liquids	34,607.52	17,336.25	218,625.48	190,855.35
10. Materials or substances for perfumery, dyes, paints, and other uses	9,974.34	15,735.15	2,252.88	1,720.80
11. Chemical products, pharmaceutical compositions, and medicines in general	26,327.70	18,309.15	8,991.54	2,520.45
12. Woods	2,842.02	2,412.00	1,367.28	681.30
13. Indian cane, bamboo, split cane, rattan, osier, and other reeds	83.16	31.05	70.20	.....
14. Straw, esparto grass, cocoanut fiber, aloe, piassava, vegetable silk, and other fibers	1,863.54	1,640.25	1,436.94	3,540.15
15. Cotton	44,420.94	52,692.30	52.92	90.90
16. Wool	49,806.90	53,061.30	44.82	.....
17. Hemp	11,907.54	12,526.20	899.10	690.75
18. Silk	18,822.78	33,030.00	96.66	168.75
19. Paper and its manufactures	5,834.16	6,132.15	589.68	1,462.95
20. Stones, earths, and other minerals	226.80	111.15	520.56	502.20
21. China, earthen, and glass wares	7,492.50	4,136.40	.....	72.45
22. Gold, silver, and platinum	475.20	1,808.10	1,393.74	.....
23. Copper and its alloys	1,932.66	5,396.85	.....	6.75
24. Lead, pewter, zinc, and their alloys	58.86	608.85	.....	.....
25. Iron and steel	3,598.02	4,170.15	174.96	70.20
26. Metalloids and other metals	115.56	159.75	55.62	95.85
27. Arms and armaments, ammunition, and war material	269.46	417.60	.....	.....
28. Cutlery	649.08	913.50	133.92	.....
29. Watches and clocks	6,260.22	7,118.10	.....	.....
30. Coach-makers' material	532.44	159.75	.....	.....
31. Mathematical, physical, chemical, and optical objects and instruments	3,866.40	5,934.60	.....	.....
32. Surgical instruments and objects	3,600.18	3,119.40	.....	.....
33. Instruments of music and their belongings	1,226.34	908.55	4.32	195.75
34. Machinery, implements, tools, and other utensils	1,313.82	797.40	964.44	280.35
35. Other objects	13,297.50	15,347.25	190.62	6.75
Total	358,470.90	370,633.95	269,748.90	228,141.45

Table showing imports entered for consumption at Rio Grande do Sul, etc.—Continued.

Classes of the tariff.	Belgium.		Italy.	
	1889.	1890.	1889.	1890.
2. Hair, fur, and feathers	$1,432.08	$1,597.95	$527.58	.....
3. Skins and hides (dressed or tanned in leather).	2,047.14	16,381.80	156.60	$557.10
4. Flesh, fish, oleaginous materials, and other animal products	8,908.38	18,002.25	1,194.48	4,442.85
5. Ivory, mother-of-pearl, turtle shell, and other animal shells	1,105.38	170.10	78.84	67.50
6. Fruits	38.88	.....	1,150.74	1,955.70
7. Vegetables, farinaceous products, and cereals	2,385.18	859.05	19,123.56	20,169.45
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices	1,366.74	505.35	2,239.38	3,476.70
9. Vegetable or other juices and alcoholic, fermented, and other liquids	1,342.98	665.10	22,044.42	22,499.10
10. Materials or substances for perfumery, dyes, paints, and other uses	1,253.88	1,452.60	.....	91.80
11. Chemical products, pharmaceutical compositions, and medicines in general	4,646.16	2,854.35	2,516.40	2,278.35
12. Woods	1,490.40	499.50	83.16	54.90
13. Indian cane, bamboo, split cane, rattan, osier, and other reeds	22.68	13.95	.....	.....
14. Straw, esparto grass, cocoanut fiber, aloe, piassava, vegetable silk, and other fibers	140.40	.....	.....	.....
15. Cotton	8,251.20	9,855.45	3,831.84	7,402.50
16. Wool	14,885.10	24,186.60	124.74	.....
17. Hemp	7,152.84	11,307.15	2,825.88	4,342.05
18. Silk	345.06	560.70	5.94	27.00
19. Paper and its manufactures	8,574.12	11,391.30	3,312.90	2,509.20
20. Stones, earths, and other minerals	123.66	19.35	2,059.02	3,650.85
21. China, earthen, and glass wares	13,392.00	4,914.45	90.18	.....
23. Copper and its alloys	1,933.74	3,566.25	.....	219.15
24. Lead, pewter, zinc, and their alloys	288.36	63.00	.....	.....
25. Iron and steel	2,526.66	4,270.05	.....	.....
26. Metalloids and other metals	.....	.....	.....	66.15
27. Arms and armaments, ammunition, and war material	3,655.26	3,638.25	351.00	643.50
28. Cutlery	561.60	667.35	.....	99.90
29. Watches and clocks	679.32	2,854.35	.....	.....
31. Mathematical, physical, chemical, and optical objects and instruments	529.20	240.30	.....	.....
32. Surgical instruments and objects	119.34	364.05	.....	.....
33. Instruments of music and their belongings	434.70	222.30	.....	.....
34. Machinery, implements, tools, and other utensils	25,103.52	931.50	.....	3.15
35. Other objects	3,256.74	1,385.55	58.86	761.40
Total	117,992.70	123,439.95	61,175.52	75,318.30

Table showing imports entered for consumption at Rio Grande do Sul, etc.—Continued.

Classes of the tariff.	Holland.		Austria.	
	1889.	1890.	1889.	1890.
3. Skins and hides (dressed or tanned in leather)				$504.00
4. Flesh, fish, oleaginous materials, and other animal products	$7,313.22	$6,614.10		
7. Vegetables, farinaceous products, and cereals			$14,214.96	4,320.00
9. Vegetable or other juices and alcoholic, fermented, and other liquids		54.00		93.15
19. Paper and its manufactures				69.30
Total	7,313.22	6,668.10	14,214.96	4,986.45

Classes of the tariff.	Argentine Republic.		Spain.	
	1889.	1890.	1889.	1890.
4. Flesh, fish, oleaginous materials, and other animal products				$183.15
6. Fruits				61.20
7. Vegetables, farinaceous products, and cereals	$11,521.44	$30,482.10		3,382.20
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices		108.00		150.75
9. Vegetable or other juices and alcoholic, fermented, and other liquids			$19,536.12	39,440.70
11. Chemical products, pharmaceutical compositions, and medicines in general			116,731.80	77,292.90
12. Woods			10.80	1.80
15. Cotton				830.70
17. Hemp			115.56	270.00
18. Silk		45.00		49.50
23. Copper and its alloys			3.24	
25. Iron and steel			674.46	
34. Machinery, implements, tools, and other utensils			54.00	
35. Other objects			231.12	190.80
Total	11,521.44	30,635.10	137,357.10	121,853.70

Table showing imports entered for consumption at Rio Grande do Sul, etc.—Continued.

Classes of the tariff.	Norway and Sweden.		Total.	
	1889.	1890.	1889.	1890.
1. Live and stuffed animals			$10.80	$69.75
2. Hair, fur, and feathers			10,277.28	18,184.50
3. Skins and hides (dressed or tanned in leather)			162,018.90	248,131.80
4. Flesh, fish, oleaginous materials, and other animal products		$1,402.20	133,764.48	160,253.10
5. Ivory, mother-of-pearl, turtle shell, and other animal shells			11,552.22	15,846.75
6. Fruits			25,429.14	22,442.85
7. Vegetables, farinaceous products, and cereals			348,766.56	237,182.40
8. Plants, leaves, flowers, fruits, seeds, roots, barks, forage, and spices			67,414.14	95,881.95
9. Vegetable or other juices and alcoholic, fermented, and other liquids			380,008.26	392,995.35
10. Materials or substances for perfumery, dyes, paints, and other uses			166,937.76	170,368.65
11. Chemical products, pharmaceutical compositions, and medicines in general			234,356.22	199,853.55
12. Woods			17,781.12	16,012.35
13. Indian cane, bamboo, split cane, rattan, osier, and other reeds			1,108.62	1,056.60
14. Straw, esparto grass, cocoanut fiber, aloe, piassava, vegetable silk, and other fibers			12,907.62	16,567.20
15. Cotton			1,189,071.36	2,645,160.75
16. Wool			475,394.94	911,240.10
17. Hemp			135,798.66	158,288.40
18. Silk			76,617.36	119,679.75
19. Paper and its manufactures			63,786.42	67,914.00
20. Stones, earths, and other minerals			179,260.02	177,563.25
21. China, earthen, and glass wares			64,317.78	53,882.10
22. Gold, silver, and platinum			2,924.10	3,194.10
23. Copper and its alloys			19,688.40	34,617.60
24. Lead, pewter, zinc, and their alloys			9,040.68	5,852.70
25. Iron and steel			161,530.74	210,693.60
26. Metalloids and other metals			2,075.22	835.65
27. Arms and armaments, ammunition, and war material			11,787.12	24,468.30
28. Cutlery			8,806.32	14,996.25
29. Watches and clocks			9,288.00	12,746.25
30. Coach-makers' material			2,705.94	1,882.80
31. Mathematical, physical, chemical, and optical objects and instruments			9,249.12	8,876.25
32. Surgical instruments and objects			8,032.50	6,770.70
33. Instruments of music and their belongings			10,743.30	17,810.10
34. Machinery, implements, tools, and other utensils			77,201.64	74,104.65
35. Other objects			99,287.64	131,085.90
Total		1,402.20	4,188,940.38	6,276,510.00

Table showing exports from Rio Grande do Sul for the years 1889 and 1890.

Articles.	Great Britain.		United States.	
	1889.	1890.	1889.	1890.
Horse and other hairs	$2,470.82	$2,440.35	$40,540.85	$16,384.50
Hides, with hair on	112,075.33	318,711.37	29,182.25	22,564.35
Hide cuttings	4,511.38	5,569.65	140.61	218.92
Wool, cleaned	10,326.21	.....	27,613.80	6,867.93
Bones	13,051.80	15,391.65	.....	.....
Ox and other horns	2,940.30	5,155.20	.....	168.75
Bone ash	2,511.00	.....	.....	.....
Stones	66.96	.....	.....	.....
Other products	1,067.93	810.00	1,034.21	279.00
Total	149,021.73	348,078.22	98,511.72	46,483.45
Duties	12,239.64	.....	8,215.02	.....

Articles.	France.		Argentine Republic.	
	1889.	1890.	1889.	1890.
Tobacco and its manufactures	.....	.....	$6.48	.....
Ox and other horns	$618.84	.....	.....	.....
Matte (Paraguayan tea)	.....	.....	340.20	$85.05
Coffee, ground	.....	.....	210.60	.....
Straw (grass)	.....	.....	15.75	.....
Hides, tanned	.....	$22.05	.....	.....
Other products	.....	104.40	.....	.....
Total	618.84	126.45	573.03	85.05
Duties	39.42	.....	39.96	.....

Articles.	Uruguay.		Italy.	
	1889.	1890.	1889.	1890.
Hides, with hair on	.....	.....	$14,775.25	$15,668.55
Tobacco and its manufactures	$5,645.70	$1,780.20	2,933.36	.....
Wool, cleaned	108.00	199.80	.....	.....
Ox and other horns	.....	.....	172.80	213.75
Matte (Paraguayan tea)	7,200.23	763.65	.....	.....
Lumber for building	378.00	2,080.80	.....	.....
Cane brandy	82.94	.....	.....	.....
Coffee, ground	1,992.60	45.90	.....	.....
Farinha de mandioca	2,192.94	6,866.10	.....	.....
Onions	25.92	2,507,85	.....	.....
Shoes, wooden soles	13.77	.....	.....	.....
Harness	8.64	.....	.....	.....
Wine	103.68	.....	.....	.....
Sea biscuits	.....	22.05	.....	.....
Potatoes	.....	36.00	.....	.....
Sweetmeats	.....	61.65	.....	.....
Starch	.....	295.20	.....	.....
Wood, fire	.....	51.75	.....	.....
Other products	583.20	699.75	.....	.....
Total	18,335.62	15,410.70	17,881.41	15,882.30
Duties	1,399.68	.....	1,602.18	.....

Table showing exports from Rio Grande do Sul for the years 1889 and 1890—Continued.

Articles.	Germany.		Belgium.	
	1889.	1890.	1889.	1890.
Horse and other hairs	$4,439.93	$243.00	$117.93	.....
Hides, with hair on	57,009.42	40,864.49	.....	.....
Tobacco and its manufactures	.....	17.55	.....	.....
Hide cuttings	496.26	.....	.....	.....
Wool, cleaned	.....	.....	22,862.93	$19,264.71
Bones	.....	8.10	.....	.....
Farinha de mandioca	.54	.....	.....	.....
Stones	.....	.....	.....	169.20
Sweetmeats	.....	4.50	.....	.....
Other products	.....	157.50	.....	.....
Total	61,946.15	41,295.14	22,980.86	19,433.91
Duties	5,555.58	.....	1,610.82	.....

Articles.	Portugal.		Total.	
	1889.	1890.	1889.	1890.
Horse and other hairs	.....	.....	$47,569.53	$19,067.85
Hides, with hair on	.....	$8,419.63	213,042.25	406,228.39
Tobacco and its manufactures	.....	.....	8,585.54	1,797.75
Hide cuttings	.....	.....	5,148.25	5,788.56
Wool, cleaned	.....	.....	60,910.94	26,332.45
Bones	.....	.....	13,051.80	15,399.75
Ox and other horns	.....	.....	3,731.94	5,537.70
Matte (Paraguayan tea)	.....	.....	7,540.43	848.70
Lumber for building	.....	.....	378.00	2,080.80
Cane brandy	.....	138.24	82.94	138.24
Coffee, ground	.....	33.75	2,203.20	79.65
Farinha de mandioca	.....	65.07	2,193.48	6,931.17
Onions	.....	.....	25.92	2,507.85
Shoes, wooden soles	.....	.....	13.77	.....
Harness	.....	.....	8.64	.....
Bone ash	.....	.....	2,511.00	.....
Straw (grass)	.....	.....	15.75	.....
Wine	.....	.....	103.68	.....
Stones	.....	.....	66.96	169.20
Sea biscuits	.....	.....	.....	22.05
Potatoes	.....	.....	.....	36.00
Hides, tanned	.....	.....	.....	22.05
Sweetmeats	.....	.....	.....	66.15
Starch	.....	.....	.....	295.20
Wood, fire	.....	.....	.....	51.75
Other products	.....	.....	2,685.34	2,050.65
Total	.....	8,656.69	369,869.36	495,451.91
Duties	.....	.....	30,702.24	.....

CHARLES NEGLEY,
Consul.

UNITED STATES CONSULATE,
Rio Grande do Sul, September 21, 1891.

ANTIGUA.

REPORT BY CONSUL BRADFORD.

The following tables show the general imports into, and exports from, the presidency of Antigua during the year 1890:

Table showing imports into Antigua during the year 1890.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Aërated waters	Great Britain	$2,166.25		
	Barbados	35.61		
	Windward Islands	.97		
	Leeward Islands	89.50		
	United States	16.22		
	French ports	499.64		
	Total	2,808.19	$186.85	6 per cent ad valorem.
Alcoholic liquors:				
Brandy	Great Britain	1,359.12		
	Barbados	62.45		
	United States	58.40		
	Total	1,479.97	817.51	$1.01 per gallon.
Gin	Great Britain	521.04		
	Barbados	18.25		
	Leeward Islands	197.76		
	Dutch ports	2,496.51		
	Danish ports	13.58		
	Total	3,247.14	3,005.25	73 cents per gallon.
Liqueurs and cordials	Great Britain	74.46		
	French ports	2.43		
	Dutch ports	22.39		
	Danish ports	13.82		
	Total	113.10	56.45	$1.21 per gallon.
Malt—				
In casks	Great Britain	808.48		
	Barbados	137.35		
	Total	945.83	135.95	$2.43 per cask.
In bottles	Great Britain	3,805.30		
	United States	134.44		
	Total	3,939.74	394.69	18 cents per dozen.
Rum	Great Britain	6.08		
	Demerara	882.05		
	Windward Islands	68.13		
	Leeward Islands	19,296.50		
	French ports	.73		
	Dutch ports	350.87		
	Total	20,604.36	30,600.07	60 cents per gallon.
Whisky	Great Britain	8,612.42	3,902.15	73 cents per gallon.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty. Gross amount.	Duty. Rate.
Alcoholic liquors—Cont'd.				
Wine	Great Britain	$2,286.93		
	Barbados	122.16		
	Demerara	5.84		
	Windward Islands	22.39		
	United States	294.15		
	French ports	189.83		
	Total	2,921.30	$764.16	25 per cent ad valorem.
Animals:				
Cattle	Barbados	274.75		
	Leeward Islands	42.82		
	do	*2,984.86		
	French ports	58.40		
	Dutch ports	5,535.23		
	Total	8,896.06	245.22	$1.01 each.
Horses	British North America	486.65		
	Barbados	656.98		
	Leeward Islands	335.79		
	do	*221.01		
	United States	1,307.87		
	Dutch ports	377.15		
	Danish ports	48.66		
	Total	3,434.11	188.88	$7.30 each.
Mules	Leeward Islands	319.36		
	United States	9,702.58		
	Total	10,021.94	454.40	$4.87 each.
Small stock	Leeward Islands	3,482.69		
	United States	74.76		
	French ports	25.30		
	Dutch ports	263.39		
	Total	3,846.14	.....	Free.
Bricks and tiles	Great Britain	2,184.26		
	Dutch ports	699.70		
	Total	2,883.96	219.16	$1.01 per thousand.
Books and printed matter	Great Britain	6,188.36		
	Barbados	4.05		
	United States	586.43		
	Total	6,778.84	.....	Free.
Boots and shoes	Great Britain	19,220.54		
	Barbados	14.19		
	Windward Islands	3.40		
	Leeward Islands	2.92		
	United States	502.81		
	Danish ports	5.60		
	Total	19,749.46	1,325.91	6 per cent ad valorem.

* Free.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Carriages and carts	Great Britain	$813.94		
	Barbados	416.69		
	Leeward Islands	*393.41		
	do	12.77		
	United States	3,468.03		
	Total	5,104.84	$318.00	6 per cent ad valorem.
Coal and patent fuel	Great Britain	2,776.48		
	Barbados	68.51		
	Windward Islands	437.98		
	Total	3,282.97	308.90	50 cents per ton.
Cottons, woolens, and unmade materials.	Great Britain	97,217.15		
	British North America	2,219.12		
	Barbados	1,463.43		
	Trinidad	1.21		
	Demerara	2.43		
	Windward Islands	4.62		
	Leeward Islands	641.91		
	United States	1,574.55		
	Dutch ports	2.55		
	Total	103,126.97	6,981.63	20 cents per 100 pounds.
Drugs and chemicals	Great Britain	4,619.38		
	British North America	57.97		
	Barbados	317.41		
	Trinidad	2.83		
	United States	1,122.31		
	French ports	32.28		
	Total	6,152.18	417.52	Do.
Earthenware and glassware	Great Britain	6,086.82		
	Barbados	16.58		
	Trinidad	13.78		
	Windward Islands	17.25		
	Leeward Islands	39.78		
	United States	796.22		
	French ports	247.80		
	Dutch ports	31.10		
	Total	7,249.33	491.72	Do.
Estate stores	Great Britain	1,234.30		
	British North America	115.37		
	Barbados	1,036.14		
	Leeward Islands	8.11		
	United States	220.34		
	Dutch ports	.36		
	Total	2,614.62	175.47	Do.

*Free.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence Imported.	Value.	Duty.	
			Gross amount.	Rate.
Fancy goods (toys, games, etc.)	Great Britain	$6,463.70		
	Barbados	35.89		
	Trinidad	.73		
	Windward Islands	4.87		
	Leeward Islands	17.64		
	United States	317.25		
	Dutch ports	2.02		
	Total	6,842.10	$461.83	20 cents per 100 pounds.
Furniture	Great Britain	1,470.49		
	British North America	71.47		
	Barbados	76.16		
	Leeward Islands	49.64		
	United States	642.68		
	Danish ports	12.16		
	Total	2,322.60	156.77	Do.
Grain:				
Corn	Barbados	1,156.19		
	Leeward Islands	*20.20		
	United States	26,782.64		
	Dutch ports	331.52		
	Total	28,290.55	3,591.33	6 cents per bushel.
Oats	Great Britain	178.67		
	British North America	42.58		
	Barbados	200.74		
	United States	344.62		
	Total	766.61	89.71	Do.
Peas, beans, barley, etc.	Great Britain	524.02		
	British North America	62.00		
	Leeward Islands	237.24		
	United States	972.70		
	Dutch ports	6.08		
	Total	1,802.04	81.16	Do.
Rice	Great Britain	16,691.32		
	Barbados	539.16		
	United States	9.29		
	Total	17,239.77	4,468.70	48 cents per 100 pounds.
Government stores and supplies.	Great Britain	13,722.85		
	British North America	216.56		
	Barbados	84.50		
	Demerara	860.04		
	Windward Islands	272.92		
	Leeward Islands	11.06		
	United States	2,181.24		
	Dutch ports	63.02		
	Total	17,412.19	.....	Free.

* Free.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Guns and ammunition	Great Britain	$293.99		
	Barbados	36.30		
	United States	131.19		
	Danish ports	19.47		
	Total	480.95	$33.26	6 per cent ad valorem.
Haberdashery and millinery, made clothing, hats and finery.	Great Britain	57,467.68		
	British North America	189.00		
	Barbados	130.30		
	Trinidad	8.11		
	Windward Islands	32.71		
	Leeward Islands	6.71		
	United States	110.52		
	French ports	10.70		
	Danish ports	30.48		
	Total	57,926.21	3,898.82	Do.
Hardware	Great Britain	35,584.13		
	British North America	36.48		
	Barbados	230.39		
	Trinidad	17.23		
	Leeward Islands	91.93		
	United States	1,464.22		
	French ports	2.43		
	Danish ports	4.87		
	Total	37,431.68	2,532.48	Do.
Jewelry, silver, and plate	Great Britain	2,138.89		
	United States	40.55		
	Total	2,179.44	147.11	Do.
Leather and saddlery	Great Britain	6,419.72		
	Barbados	39.17		
	United States	301.46		
	Dutch ports	16.06		
	Total	6,776.41	448.91	Do.
Lime and cement	Great Britain	1,88256		
	Barbados	53.42		
	Trinidad	50.68		
	Total	1,986.66	134.09	Do.
Machinery for the manufacture of sugar.	Great Britain	44,205.74		
	United States	12.02		
	Total	44,217.76		Free.
Manures	Great Britain	33,875.77		
	British North America	39.03		
	Barbados	1,626.48		
	Total	35,541.28		Do.
Matches	Great Britain	39.84		
	United States	1,813.75		
	Total	1,853.59	118.59	6 per cent ad valorem.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Musical instruments	Great Britain	$893.61		
	British North America	166.08		
	Barbados	141.33		
	Trinidad	97.33		
	United States	67.92		
	Total	1,366.21	$92.21	6 per cent ad valorem.
Naval stores	Great Britain	5,373.39		
	British North America	74.21		
	Barbados	8.76		
	Leeward Islands	76.06		
	United States	2,291.64		
	Danish ports	146.00		
	Total	7,970.06	528.52	Do.
Oil meal and linseed meal	Great Britain	455.54		
	Barbados	2,553.19		
	United States	9,820.96		
	Total	12,829.69	1,920.82	20 cents per 100 pounds.
Packages	Great Britain	6,487.08		
	Barbados	1,911.78		
	Trinidad	17.09		
	Leeward Islands	13.31		
	United States	1,490.89		
	French ports	2,246.33		
	Dutch ports	61.92		
	Total	12,228.40	840.96	6 per cent ad valorem.
Paint and varnish	Great Britain	3,291.62		
	Barbados	7.30		
	United States	227.00		
	Total	3,525.92	230.59	Do.
Perfumery	Great Britain	912.81		
	Barbados	16.62		
	Leeward Islands	9.89		
	United States	1,843.42		
	Dutch ports	34.27		
	Danish ports	179.16		
	Total	2,996.17	194.06	Do.
Provisions:				
Breadstuffs—				
Bread and biscuits	Great Britain	903.36		
	Demerara	1.21		
	United States	13,210.11		
	Dutch ports	14.04		
	French ports	278.80		
	Total	14,407.52	2,236.47	48 cents per 100 pounds.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Provisions—Continued.				
Breadstuffs—Continued.				
Flour	British North America	$50.68		
	Barbados	4,233.69		
	United States	84,888.00		
	French ports	1,216.62		
	Dutch ports	768.87		
	Total	91,177.26	$26,504.93	$1.21 per barrel.
Meal	Great Britain	537.53		
	British North America	41.80		
	Barbados	3,477.12		
	Leeward Islands	43.94		
	United States	28,780.37		
	Dutch ports	182.49		
	Total	33,063.25	5,928.13	48 cents per barrel.
Meats, fish, and dairy products—				
Salted and dried beef	Great Britain	12.77		
	British North America	304.15		
	Barbados	79.07		
	United States	5,758.53		
	Dutch ports	24.33		
	Total	6,178.85	1,378.49	Half a penny per pound.
Butter	Great Britain	10,577.43		
	British North America	414.64		
	Barbados	286.23		
	United States	3,515.21		
	Total	14,793.51	1,759.34	2 cents per pound.
Cheese	Great Britain	190.88		
	British North America	32.85		
	United States	4,092.70		
	Dutch ports	25.38		
	Danish ports	2.02		
	Total	4,343.83	768.16	Do.
Dried fish	Great Britain	328.02		
	British North America	19,914.56		
	Barbados	15,578.07		
	Leeward Islands	3,251.43		
	United States	755.32		
	French ports	1,399.12		
	Dutch ports	2.43		
	Total	41,228.95	2,662.06	24 cents per quintal.
Pickled fish	Great Britain	12.16		
	British North America	5,362.01		
	Barbados	1,376.97		
	Leeward Islands	385.26		
	United States	385.86		
	French ports	416.20		
	Total	7,938.46	1,235.51	48 cents per barrel.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Provisions—Continued.				
Meats, fish, and dairy products—Continued.				
Hams, bacon, and tongues.	Great Britain	$2,024.46		
	United States	2,044.88		
	Dutch ports	19.71		
	Total	4,089.05	$719.32	2 cents per pound.
Lard	Great Britain	85.28		
	British North America	72.46		
	United States	2,220.60		
	Total	2,378.34	1,083.07	Do.
Pork	British North America	152.07		
	United States	27,362.88		
	Dutch ports	14.60		
	Total	27,529.55	5,990.21	1 cent per pound.
Groceries, vegetables, etc.—				
Coffee and cocoa	Great Britain	310.74		
	Jamaica	437.98		
	Leeward Islands	24.65		
	do	*5,020.56		
	United States	515.15		
	French ports	45.42		
	Dutch ports	3.65		
	Total	6,358.15	272.55	2 cents per pound.
Fruits and potatoes.	Great Britain	368.74		
	British North America	465.86		
	Barbados	439.15		
	Trinidad	580.75		
	Windward Islands	148.25		
	Leeward Islands	1,187.24		
	United States	1,564.36		
	French ports	391.63		
	Dutch ports	101.38		
	Danish ports	6.08		
	Total	5,253.44	393.98	36 cents per barrel.
Fruits (dried and preserved.)	Great Britain	1,192.27		
	Demerara	7.42		
	Windward Islands	2.19		
	United States	75.98		
	Danish ports	1.09		
	Total	1,278.95	639.16	4 cents per pound.
Sugar—				
Refined	Great Britain	279.33		
	Demerara	.82		
	United States	571.69		
	Total	851.83	454.17	2 cents per pound.
Unrefined	Leeward Islands	225.80		Free.

*Free.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty. Gross amount.	Duty. Rate.
Provisions—Continued.				
Groceries, vegetables, etc.—Continued.				
Tea	Great Britain	$1,492.82		
	Leeward Islands	92.66		
	Total	1,585.48	$492.22	8 cents per pound.
Groceries and confections.	Great Britain	9,169.13		
	British North America	126.93		
	Barbados	347.66		
	Trinidad	171.38		
	Demerara	29.63		
	Windward Islands	1,392.51		
	Leeward Islands	63.58		
	do	*1,399.54		
	United States	1,827.80		
	French ports	159.96		
	Dutch ports	516.90		
	Danish ports	3.65		
	Total	15,197.67	892.53	6 per cent ad valorem.
Ice and iced provisions.	United States	1,106.86	.....	Free.
Stationery and wrapping paper.	Great Britain	3,479.71		
	Barbados	18.91		
	United States	922.99		
	Total	4,421.61	300.11	6 per cent ad valorem.
Straw and bamboo work	Great Britain	47.28		
	Leeward Islands	14.53		
	United States	7.60		
	French ports	64.69		
	Dutch ports	129.81		
	Total	263.91	17.81	
Tallow and oils:				
Candles—				
Tallow	United States	1,015.15	261.98	2 cents per pound.
Other	Great Britain	1,211.82		
	Trinidad	5.11		
	Total	1,216.93	855.90	6 cents per pound.
Oils	Great Britain	3,312.34		
	Barbados	13.38		
	United States	13.13		
	French ports	522.80		
	Total	3,861.65	768.91	12 cents per gallon.
Petroleum or kerosene.	United States	5,743.80	2,838.41	6 cents per gallon.

* Free.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Tallow and oils—Continued.				
Soap	Great Britain	$6,055.00		
	British North America	239.27		
	Barbados	61.32		
	Trinidad	2.02		
	Leeward Islands	2.55		
	United States	266.03		
	French ports	31.77		
	Total	6,657.96	$1,986.94	1 cent per pound.
Tallow	Great Britain	973.36	287.06	2 cents per pound.
Tobacco:				
Cigars	Jamaica	236.87		
	United States	1.52		
	Danish ports	289.77		
	Total	528.16	88.61	8 cents per pound and 10 per cent ad valorem.
Leaf	United States	6,754.12	7,789.96	10 cents per pound.
Manufactured	Great Britain	155.89		
	United States	490.21		
	Danish ports	4.87		
	Total	650.97	159.05	Do.
Tombstones	Great Britain	585.19		
	Barbados	48.66		
	Total	633.85	42.77	6 per cent ad valorem.
Wood:				
Shingles—				
Cedar and pine	British North America	1,969.94		
	United States	1,058.15		
	Total	3,028.09	771.91	50 cents per 1,000.
Cypress and wallaba	Barbados	81.10		
	United States	4,339.70		
	Total	4,420.80	1,088.23	$1.01 per 1,000.
Hoops	Great Britain	5,851.39		
	British North America	152.07		
	Barbados	237.24		
	Total	6,240.70	540.37	$1.21 per 1,000.
Pitch pine	United States	6,886.46	912.39	$2.02 per 1,000.
White pine and spruce	British North America	9,540.30		
	United States	12,414.17		
	Total	21,954.47	2,694.76	$1.52 per 1,000.
Staves	Barbados	253.46		
	United States	1,266.04		
	French ports	223.04		
	Total	1,742.54	143.61	Do.

Table showing imports into Antigua during the year 1890—Continued.

Articles.	Whence imported.	Value.	Duty.	
			Gross amount.	Rate.
Wood—Continued.				
Shooks—				
Without heads	British North America	$447.72		
	Barbados	3,834.32		
	United States	6,221.82		
	Total	10,503.86	$1,501.33	12 cents per bundle.
With heads	British North America	86.36	40.32	16 cents per bundle.
	Grand total		147,471.39	

RÉSUMÉ OF IMPORTS.

Great Britain	$446,304.92
United States	296,802.26
British North America	43,090.13
Barbados	43,858.58
Leeward Islands	40,314.61
Dutch ports	12,085.76
French ports	8,065.92
Windward Islands	2,407.19
Trinidad	2,174.96
Demerara	1,779.43
Danish ports	812.74
Jamaica	674.85
Total	898,371.26

Table showing exports from Antigua during the year 1890.

Articles.	Whither exported.	Value.	
		Colonial produce.	Foreign produce.
Aërated waters	Leeward Islands		$21.09
Alcoholic liquors:			
Alcohol and spirits of wine	do		69.10
Brandy	do		201.96
Gin	British North America		58.52
	Leeward Islands		31.22
	United States		48.38
	Total		138.12
Cordials and liqueurs	British North America		10.70
Malt, in bottles	Leeward Islands		168.35
	French ports		26.76
	Total		195.11
Rum	British North America		44.77

Table showing exports from Antigua during the year 1890—Continued.

Articles.	Whither exported.	Value.	
		Colonial produce.	Foreign produce.
Alcoholic liquors—Continued.			
Whisky	British North America		$9.73
	Leeward Islands		247.09
	French ports		3.89
	Total		260.71
Wines	Leeward Islands		138.69
Animals:			
Asses	Barbados	$228.73	
	Windward Islands	5.84	
	Leeward Islands	215.99	
	French ports	563.05	
	Total	1,013.61	
Cattle	Barbados		316.32
	Windward Islands	146.00	
	Leeward Islands	48.66	
	Danish ports	9.73	
	Total	204.39	316.32
Horses	Barbados	1,566.80	
	Windward Islands	37.72	
	Other islands	48.66	
	Leeward Islands	435.55	
	French ports	340.66	
	Total	2,428.79	
Small stock	Windward Islands	1.21	
	Leeward Islands	1.46	
	French ports	88.69	
	Total	91.36	
Books	Great Britain		9.73
	Windward Islands		25.54
	Dutch ports		2.67
	Total		37.94
Boots and shoes	Leeward Islands		108.54
Carriages	Barbados		97.33
	French ports		12.16
	Total		109.49
Cotton, woolens, etc	Great Britain		140.15
	Leeward Islands		3,911.12
	Dutch ports		60.14
	Total		4,111.41
Drugs and chemicals	Leeward Islands		23.36
Dyes and dye woods	French ports	500.53	

Table showing exports from Antigua during the year 1890—Continued.

Articles.	Whither exported.	Value.	
		Colonial produce.	Foreign produce.
Earthenware and glassware	Barbados		$14.60
	Leeward Islands		455.47
	French ports		1.46
	United States		7.30
	Total		478.83
Estate stores	Barbados		25.50
	Leeward Islands		710.63
	Total		736.13
Fancy goods	Great Britain	$3.04	
	Leeward Islands	4.13	1.94
	Total	7.17	1.94
Furniture	Barbados		243.32
	Leeward Islands		308.23
	Danish ports		1,216.62
	Total		1,768.17
Grain?			
Corn	Leeward Islands		255.12
	French ports	2.19	
	Dutch ports		3.40
	Total	2.19	258.52
Oats	Leeward Islands		1.94
Peas and beans	do		14.76
Rice	do		9.00
Guns and ammunition	do		16.70
Haberdashery and millinery	Great Britain		35.77
	Leeward Islands		144.61
	French ports		.73
	Dutch ports		12.16
	Total		193.27
Hardware	Great Britain		172.76
	British North America		137.47
	Barbados		24.33
	Leeward Islands		294.07
	United States		20.28
	Dutch ports		52.55
	Total		701.46
Hides and skins	British North America	189.31	
	Leeward Islands	174.36	
	United States	209.13	
	French ports	31.63	
	Total	604.43	
Jewelry, silver, and plate	Great Britain		48.66
Leather and saddlery	Leeward Islands		48.03
	French ports		10.94
	Total		58.97

Table showing exports from Antigua during the year 1890—Continued.

Articles.	Whither exported.	Value.	
		Colonial produce.	Foreign produce.
Matches	Leeward Islands		$133.46
	French ports		13.68
	Dutch ports		3.65
	Total		150.79
Musical instruments	Great Britain		121.66
	Barbados		267.66
	Total		389.32
Naval stores	Leeward Islands		106.27
	French ports		1.46
	Total		107.73
Packages	Barbados		96.35
	Windward Islands		56.81
	Leeward Islands		1,057.12
	French ports		2.92
	Dutch ports		30.63
	Total		1,243.83
Paint and varnish	Leeward Islands		10.15
Perfumery	British North America		18.51
	Leeward Islands		48.82
	Total		67.33
Provisions:			
Breadstuffs, bread, and biscuits	Leeward Islands		118.03
	United States		10.74
	Mexico		9.12
	Total		137.89
Flour	Barbados		200.74
	Leeward Islands		1,886.36
	United States		18.98
	Dutch ports		165.05
	Danish ports		253.46
	Mexico		12.16
	Total		2,536.75
Meal	Barbados		537.74
	Leeward Islands		397.19
	Dutch ports		43.18
	Total		977.71
Salted and dried beef	Leeward Islands		226.98
	United States		19.75
	French ports		6.93
	Dutch ports		79.40
	Mexico		6.08
	Total		339.14
Butter	Barbados		179.24
	Leeward Islands		757.75
	French ports		694.48
	Total		1,631.47

Table showing exports from Antigua during the year 1890—Continued.

Articles.	Whither exported.	Value. Colonial produce.	Value. Foreign produce.
Provisions—Continued.			
Cheese	Leeward Islands		$16.50
Dried fish	Leeward Islands		2,387.94
	French ports		437.98
	Dutch ports		5.84
	Total		2,831.76
Pickled fish	Leeward Islands		1,149.41
	French ports		3.89
	Total		1,153.30
Hams and bacon	Barbados		45.64
	Leeward Islands		38.16
	Total		83.80
Pork	British North America		16.22
	Barbados		123.16
	Leeward Islands		202.89
	United States		55.25
	Total		397.52
Coffee and cocoa	Leeward Islands		61.52
Fruits and vegetables	Great Britain	$5,754.20	
	British North America	12.36	
	Barbados	64.47	
	Trinidad	591.04	
	Demerara	1.46	
	Windward Islands	2.43	
	Leeward Islands	440.25	9.25
	United States	258.87	
	French ports	28.22	
	Dutch ports	1.70	
	Danish ports	8.52	
	Total	7,163.52	9.25
Fruits, dried and preserved	Great Britain	380.07	
	British North America	22.63	
	Trinidad	1.94	
	Leeward Islands	4.74	
	United States	1,077.08	
	Total	1,486.46	
Sugar:			
Refined	Leeward Islands		2.63
Unrefined	Great Britain	38,303.05	
	British North America	5,720.57	
	Leeward Islands	1,073.26	
	United States	835,014.99	
	French ports	10.13	
	Dutch ports	202.81	
	Danish ports	45.58	
	Other islands	85.46	
	Total	880,455.85	

Table showing exports from Antigua during the year 1890—Continued.

Articles.	Whither exported.	Value.	
		Colonial produce.	Foreign produce.
Provisions—Continued.			
Molasses	British North America	$100,734.32	
	Leeward Islands	762.58	
	United States	13,996.81	
	French ports	22,808.24	
	Dutch ports	1,479.04	
	Total	139,780.99	
Tea	Leeward Islands		$35.89
Groceries and confections	Great Britain	47.20	
	Barbados	34.55	68.55
	Trinidad	4.87	
	Windward Islands	.97	.97
	French ports	15.45	
	Total	103.04	69.52
Stationery	Leeward Islands		18.71
Straw and bamboo work	do	.60	
Tallow and oils:			
Oils, various	Leeward Islands		12.65
	Dutch ports		2.83
	Total		15.48
Petroleum	Leeward Islands		84.55
Soap	Leeward Islands		176.42
	French ports		19.47
	Total		195.89
Tobacco:			
Leaf	Leeward Islands		366.67
	French ports		883.51
	Total		1,250.18
Manufactured	Leeward Islands		11.81
Turtle, tortoises, and turtle shell	Great Britain	1,826.59	
	French ports	337.00	
	Total	2,163.59	
Wood:			
Cedar and pine shingles	Leeward Islands		118.34
Cypress and wallaba shingles	do		44.08
Pitch pine	do		526.43
White and spruce pine	do		1,140.55
Firewood	Barbados	231.89	
	Grand total	1,036,238.51	25,735.48

RÉSUMÉ OF EXPORTS.

United States	$850,737.56
British North America	106,975.11
Great Britain	46,842.88
French ports	26,846.15
Leeward Islands	21,489.13
Barbados	4,365.92
Dutch ports	2,145.05
Danish ports	1,533.91
Trinidad	597.85
Windward Islands	277.49
Other islands	134.12
Mexico	27.36
Demerara	1.46
Total	1,061,973.99

The amount of imports was $898,371.26; of exports, $1,061,973.99; balance in favor of Antigua, $163,602.73.

JOHN S. BRADFORD,
Consul.

UNITED STATES CONSULATE,
Antigua, March 12, 1891.

COMMERCIAL PHOSPHATES IN JAPAN.

REPORT BY CONSUL SMITHERS, OF OSAKA AND HIOGO.

Commercial phosphates are not in use in this consular district for fertilizing purposes. I am credibly informed that about three years ago the Nippon Yusen Kaisha, the largest steam navigation company in Japan, imported two cargoes of phosphate, or Charleston rock, as an experiment; but the venture did not meet with any success, a large portion of these cargoes still remaining unsold.

It appears that the Japanese farmers are so conservative that it is almost impossible to prevail upon them to adopt anything new, whether it be an implement of husbandry or a new fertilizer. They have been using the same plow, hoe, and fertilizers from time immemorial, and seem to desire nothing better.

The high state of cultivation in which most of the arable land in Japan has been preserved for centuries by the use of human excrement and herring fish manure, the trade in which is very extensive, has undoubtedly greatly diminished the demand for foreign fertilizers.

So far as I have been able to ascertain, no phosphatic deposits have as yet been discovered in Japan.

The duty on all imported articles into Japan is 5 per cent ad valorem.

E. J. SMITHERS,
Consul.

UNITED STATES CONSULATE,
Osaka and Hiogo, August 28, 1891.

CORN BREAD IN GERMANY.

REPORT BY CONSUL-GENERAL EDWARDS, OF BERLIN.

I have the honor to transmit herewith a translation from the Vossische Zeitung, of this city, concerning the use of corn bread as an article of food.

W. H. EDWARDS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, October 21, 1891.

CORN BREAD IN GERMANY.

[Inclosure in Consul-General Edwards's report.—Translation from the Vossische Zeitung.]

The president of the union of German millers, Herr van den Wyngaert, in his letter published in our morning issue, describes the Murphy bread, which is composed of equal parts of rye flour and corn meal, as so bad that it could hardly be offered to a beast as food. The crumb of the bread may be likened to fresh putty. We have to-day examined specimens of the Murphy bread, and our examination does not sustain this decision. Herr van den Wyngaert expressed himself just as sharply to the middle Rhenish branch of the union against this "product of American advertisement." The bread which we have received from Mr. Murphy has a good appearance, the crumb has not the least resemblance to fresh putty, but differs very little in appearance from rye bread containing some barley flour. Moreover, the Murphy bread has a taste which is not at all unpleasant, and which could, no doubt, be improved if this article of food were generally introduced. Hundreds of thousands of poor families would rejoice if they could obtain such bread at cheap prices.

Concerning maize as an article of food, the conservative social politician Rudolf Meyer writes in Progress:

"According to Dr. Hoffmann's 'Agricultural Chemistry,' each 100 parts contain—

Articles.	Stuffs containing nitrogen.	Starch meal.	Fat or oil.	Ash.	Phosphoric acid in 100 parts of ash.
Wheat	14.6	60	1.4	1.6	0.8
Rye	10.2	57	1.8	2.1	0.8
Barley	11.8	52	2.3	3.3	0.7
Rice	7.2	80	0.1	0.9	.....
Potatoes	2.8	15	0.3	1.9	0.2
Maize	9.9	60	5.7	1.7	0.5

"The above analysis shows that maize contains almost as much nitrogen as rye, more starch and fat, and almost as much bone-producing ash. It has therefore a very similar food value. Maize contains three and one-half times as much nitrogen as potatoes, four times as much starch and phosphoric acid, and almost twenty times as much fat. Maize is therefore four times as valuable as potatoes, *i. e.*, if a meter centner of potatoes costs 7 or 8 marks, as at present, a meter centner of maize has a value of 28 or 29 marks. Yet, in spite of 2 marks duty, maize costs only half of this amount.

"If one adds to maize milk or some meat, the ratio of nitrogenous contents to starch contents can easily be raised from 1 to 6, which is hardly sufficient for nourishment, to 1 to 5, or 1 to 4, which, unless I am mistaken, is normal.

"Without taking into consideration the unusual conditions of this year, maize, which can, as a rule, be had in Germany at from 10 to 12 marks per meter centner, is worthy of recommendation as a partial substitute for bad potato food."

The only real objection to the mixture of rye and maize for bread meal lies in the fact that through the flour, if its fat has become rancid, the disease which is known in Italy as *pelagra* may be originated. Concerning this side of the question and concerning the possibility of sure protection against the *pelagra*, the opinions of physicians must be heard.

AMERICAN OLEO OIL IN THE NETHERLANDS.

REPORT BY CONSUL GARDNER, OF ROTTERDAM.

I have the honor to acknowledge the receipt of the following communication:

TREASURY DEPARTMENT, BUREAU OF STATISTICS,
Washington, July 21, 1891.

Hon. CHARLES FOSTER,
Secretary of the Treasury.

SIR: I have the honor to state that Consul Walter E. Gardner, at Rotterdam, has furnished the Department of State recently a report purporting to show, from official sources, the imports of oleomargarine oil into the Netherlands from the United States during the last five years.

Consul Gardner reports the imports of oleomargarine oil into the Netherlands from the United States during the last five [six] years as follows:

Calendar years.	Quantity.	Calendar years.	Quantity.
	Pounds.		*Pounds.*
1885	43,663,620	1889	88,200,000
1886	43,732,800	1890	93,240,000
1887	66,456,000	Total	397,572,420
1888	62,280,000		

Our own accounts show as exported to all countries and to the Netherlands, respectively, during the last five [six] years the following:

Years.	To all countries.*	To the Netherlands.†
	Pounds.	*Pounds.*
1885	34,213,232	34,012,807
1886	35,279,343	25,562,417
1887	42,645,139	37,924,789
1888	21,497,208	21,217,662
1889	42,224,223	19,879,425
1890	88,421,985	52,236,964
Total	264,281,130	190,834,064

*Calendar years. †Fiscal years.

It will be seen that the reported imports into the Netherlands from the United States largely exceed our exports to all countries, thus precluding the explanation that some of this oleomargarine oil may have reached the Netherlands through other countries.

We have examined the official statistics of imports into the Netherlands, but do not find the item of oleomargarine oil separately enumerated; therefore, we are unable to verify Consul Gardner's statement from the official Netherlands statistics of imports.

If Consul Gardner's statistics are correct, they indicate serious defects in our export statistics. For this reason I respectfully request that you will ask the Secretary of State for the sources of Consul Gardner's information of the imports of oleomargarine into the Netherlands from the United States as shown in his report. Full particulars upon this point will enable us to compare and verify the data received from collectors of customs.

Respectfully yours,

S. G. BROCK,
Chief of Bureau.

In reply, I inclose herewith a letter written by one of the principal oleo-oil importers of Rotterdam and addressed to the president of the Rotterdam Chamber of Commerce. I applied to President de Monchy for information at once upon receipt of the Department's instructions containing the Treasury communication, but the within has only reached me now.

WALTER E. GARDNER,
Consul.

UNITED STATES CONSULATE,
Rotterdam, August 19, 1891.

MR. PLUYGER TO PRESIDENT DE MONCHY.

[Inclosure in Consul Gardner's report.]

ROTTERDAM, *August 14, 1891.*

Hon. M. M. DE MONCHY,
President Chamber of Commerce, Rotterdam.

SIR: Inclosing the United States consul's letter to your good self, I beg to observe that the serious discrepancy between the figures referred to, compiled by the Bureau of Statistics of the Treasury Department of Washington and those compiled by our chamber of commerce, must, no doubt, be ascribed to the fact that American shippers of oleo oil ship their goods under different, often wrong, names. The terms most generally used in the bills of lading are tallow, grease, tallow oil, oleo oil, oleomargarine oil, and margarine. Large shippers, for instance, invariably call their oleo oil tallow, at least with few exceptions. I am quite sure that the figures given by the chamber of commerce are correct.

The number of importers of oleo oil is quite limited, and it is very easy to control the quantities which they import. The brokers here get specifications of what is exported by every steamer; moreover, myself and other importers get cables from New York before the clearance of each steamer, giving the quantity of oleo oil shipped. We can thus check the specifications given by importers to the brokers by the cables, which we get from our New York and Baltimore agents.

I venture to observe that, in the interest of good statistics, shippers should not be allowed to ship oleo oil under the name of tallow, grease, etc., which are entirely different articles.

Yours very respectfully,

W. PLUYGER,
Member Chamber of Commerce.

DECLINE OF POPULATION IN FRANCE.

REPORT BY COMMERCIAL AGENT LOOMIS, OF ST. ETIENNE.

GENERAL OBSERVATIONS.

The official figures and facts concerning marriages, births, deaths, and divorces in France during the year 1890 were made public to-day. The French Government is slow in gathering and formulating statistical information, but, on the other hand, its work in this line is done accurately and well.

The report just submitted is not of an encouraging nature. The deaths continue to outnumber the births, and the fact can no longer be concealed that the native population is diminishing with a degree of rapidity that is not effectively counterbalanced by immigration. The loss of population to France by emigration is a mere trifle, the total number of emigrants being less than 34,000 a year, and it is estimated that 64 per cent of this number return to France within ten years to remain permanently.

There are, it seems to me, two grave causes for the diminution of the population of France. One is the harshness of the marriage laws, which throw a large number of annoying obstacles in the way of persons inclined to matrimony; the other cause is to be found in the standing army of more than 500,000 men. Army life prevents many men from marrying, and the enforced military service makes it impossible for many others to marry until late in life, for, after leaving the army, they have to find positions and careers which will enable them to support families.

In France marriages, births, and deaths are attended by a host of expenses and formalities of a legal nature that are, to my knowledge, oftentimes a serious burden to the individual, particularly among the working and poorer classes.

I may also remark here that a citizen of the United States who weds or dies in France is, as a rule, unfortunate in his selection of a place for those events, as he or his heirs will speedily discover.

FACTS AND FIGURES.

The year 1890 may be reckoned as one of the most alarming in this century. The deaths have shown a heavy increase over the births. A similar phenomenon was witnessed during the year of the war (1870–'71) and in 1855, when the cholera ravaged the country, but not to such a great extent as has been revealed in the statistics for 1890. For the whole of France 269,332 marriages were registered, 5,457 divorces, 838,059 births, and 876,505 deaths. In comparing these figures with those of 1889, we find that the marriages have decreased by 3,602, the divorces increased by 671, the births decreased by 42,520, and the deaths increased by 81,572, and

consequently they have exceeded the births by 38,446. It may also be remarked that the percentage of marriages has not been so low for forty years. It is supposed that the epidemic of influenza in the early part of the year had considerable influence on the death rate.

Marriages.—The number of marriages during the year 1890 diminished by 3,602 as compared with the preceding year, and here it may be observed that the decrease has been progressive since 1884 at the rate of 1 per cent. It is to this fact that may also be attributed the decrease in the number of births, for the number of children per marriage has been three on the average for many years. The proportion of marriages to the population was, in 1890, 7 per 1,000 inhabitants.

Divorces.—Contrary to expectation, the number of divorces has increased considerably in the last six years, that is to say, since divorce was established by law in 1884, as the following table will show:

Year.	Number.	Proportion to 10,000 marriages.
1884 (last 4 months)	1,657	6.6
1885	4,277	5.7
1886	2,950	4
1887	3,637	5
1888	4,708	6.1
1889	4,786	6.2
1890	5,457	7

Births.—The number of births has fallen from 880,579 to 838,059, which is about the number registered during the year of the war, making a proportion of 21 to 1,000 inhabitants.

Illegitimate births.—There were 71,036 illegitimate births registered in France in 1890, which shows a decrease of 2,485 over 1889. The proportion is 8.5 to 100 of the total births.

Deaths.—The total number of deaths has reached the abnormal figure of 876,505, or 81,572 more than the preceding year. More than half of this increase is attributed to the epidemic of influenza, which reigned throughout the country during the months of January, February, March, and April.

The center of France seems to have experienced the lightest mortality, while in the southwest of the Republic the population increased more than in other quarters.

FRANCIS B. LOOMIS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
St. Etienne, October 21, 1891.

DANISH-ENGLISH SUBSIDIZED STEAM COMMUNICATION.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

I have the honor to present herewith a report on the steam service between the port of Esbjing, in Jutland, and England. The desire of the Danish Government to meet, as far as possible, the demands made by the exporters of agricultural products to England for cheaper and better facilities of transport by this route has led to the conclusion of a contract between the home minister and the Danish Union Steam Shipping Company for this purpose.

In 1888 an arrangement was made between the State railways and this company for the carriage of such products from Esbjing to London via the port of Parkeston at the following through rates from Esbjing, viz:

Products.	Rate.	Products.	Rate.
	s. d.		s. s. d.
Horses.....per head...	38 0	Butter.....per ton...	32 9
Cattle:		Pork and beef:	
1,050 pounds or above. .....do.....	21 6	Salted.....do.....	25 a
750 to 1,050 pounds.....do.....	19 6	Fresh.....do.....	33 6
450 to 750 pounds.....do.....	16 0	Eggs.....do.....	41 0
Under 450 pounds.....do.....	7 9	Yeast.....do.....	40 9
Sheep and lambs.....do.....	3 6	Fish .....do.....	25 to 32 6
Swine.....do.....	5 2		

Under the power reserved by the home minister in the new contract, a reduction will now be made of 5*s.* per ton on the above rates for butter, pork and beef, eggs, yeast, and fish, the company receiving in compensation, as stipulated by the contract, an extra subvention from the Government of 15,000 kroner ($4,020) per annum on every shilling of freight reduced. No reduction has been made for live stock. Seeing that the rates are considerably under the arrangement of last year, and the rates of transport by the State railways having also been reduced, these reductions may be said to be considerable, and will aid the shippers in the trade in competing with their foreign rivals. The terms of the contract are as follows:

The Union Steam Shipping Company binds itself to maintain three times a week a through communication between Esbjing and London via Parkeston.

For the above-mentioned service steamers of not less than 250 net registered tons and of suitable draft of water shall be employed, the steamers to have such horse power that, under ordinary circumstances, the passage may be made in less than thirty-eight hours. The ships must be provided with suitable accommodation for ten to twenty first-class passengers; they should also have storage rooms of proper dimensions and in such number that goods likely to cause damage to other goods can be kept separate. More especially butter and pork must be kept apart from fish and such like

goods, as well as from live stock. The compartments set apart for butter, fish, pork, and beef shall be kept cool, and the temperature during the six hours of the ship's sailing shall be brought down to 10° C. at the highest, and be placed under such control as the home minister may deem proper.

It rests with the steamer company whether it will convey by the same boats horses, cattle, sheep, and swine. The steamers employed in the existing trade with Parkeston must, however, be fitted up in such manner as to be able, when called upon, to convey live animals, more especially cattle and sheep.

The steamer company binds itself to receive for conveyance by the outgoing ships: Live stock, when these are at hand on the steamer's wharf ready for shipment four hours before the advertised time of departure, but only at such times as the ship is bound to receive live stock; fresh goods (butter, fish, beef and pork, easily perishable fruit and garden products, etc.), when at hand two hours before the time of sailing; other goods (such as salt pork, eggs, etc.), when ready for shipment four hours before the advertised hour of departure; but all this only when there may be sufficient room. The company is to take charge of the shipping of the live stock and goods on board the steamers at Esbjing, whether they may be delivered on the steamer's wharf or laden in the railway trucks on the Hastour rails at the quay side.

The days of sailing from Esbjing are Tuesday and Wednesday afternoons and Saturday at noon, the fixed hour of departure to be duly advertised in the Official Gazette.

As the company binds itself to attend to the proper custody and care of goods, so does it equally bind itself to provide proper care and attendance and fodder and water for animals.

During the passage to England, so that no delay may thereby be occasioned, it is forbidden to render assistance to other ships or to make any attempts for the salvage of those or their cargoes, unless it should be for the saving of human life or affording aid to crews in distress.

At all times, when other Danish harbors may be closed by the state of the ice in the Cattegat, the company binds itself, so far as lies in its power, to meet the increased calls that, under such circumstances, may be made on the service between Esbjing and England.

The minister reserves the right of reducing the rates of freight stipulated under the agreement of 1888 on payment of a further yearly subvention to the company of 15,000 kroner ($4,020) for every shilling of reduction per ton on the freight of the goods mentioned, which amount shall be paid in twelve monthly installments.

As compensation for the conditions imposed by the contract on the shipping company in the carrying out of the service to Parkeston, the home minister binds himself: (1) To refund to the company all wharfage dues levied at Esbjing in the course of the year on all goods and live stock shipped by their steamers to Parkeston and of which mention is made in the contract,

the payment to be made in the month of April for the foregoing financial year; (2) to pay to the company an annual subvention of 50,000 kroner ($13,405), to be paid in twelve monthly installments, this subvention to cease, however, whenever the goods named in the contract and carried from Esbjing to Parkeston shall have reached in the previous year 24,000 tons.

In the monthly settlements with the treasury, which shall take place at the latest on the 7th of every month, the right is reserved of making therefrom the following deductions: (1) The sum of 1,000 kroner ($268) for each of the trips which has failed to be carried out through neglect on the part of the company or from mishaps to the ships, this, however, to be understood in such manner that no deduction will be made when the nonperformance of the service has been due to force of circumstances beyond the control of the company; (2) the sum of 100 kroner ($26.80) for every trip to Parkeston which has employed more than forty-eight hours, and of 500 kroner ($134) for every trip that has employed more than sixty hours; but all, however, only so far as the delay can be laid to the charge of the company.

A further contract has been made between the home minister and the steamer company for a weekly service from Esbjing to the port of Hull, with boats duly fitted up for the conveyance of 700 live swine under deck in solidly arranged partitions and in pens holding not more than twenty-two head, at the rate of 3*s.* 6*d.* per head, the company securing from the Government a subvention of 4,000 kroner ($1,072) per month, together with the refunding of all wharfage dues levied at Esbjing on the swine, butter, beef, pork, and eggs shipped by their boats, the minister reserving the right, with fourteen days' notice, to select either of the ports of Sunderland, Hartlepool, Grimsby, Deptford, Rotterdam, or Antwerp as the port of destination; but, should either of the three last-named places be selected, a further payment shall be made by the Government of 1,000 kroner ($268) for the first trip and 500 kroner ($134) for each subsequent trip to either of the three places.

HENRY B. RYDER,
Consul.

UNITED STATES CONSULATE,
Copenhagen, September 20, 1891.

RAILROAD CONCESSION IN PARAGUAY.

REPORT BY CONSUL SHAW, OF ASUNCION.

I have the honor to report that in the latter part of 1889 Count Obert de Thessien applied for a concession from the Paraguayan Government to construct a railroad from Asuncion to Santos, Brazil, via San Estanisleo and Tacurupucu, on the upper Parana. On August 27, 1891, the concession was ratified by the Paraguayan Government, which guaranties 6 per cent on $30,000 (gold) per kilometer for the period of thirty years for road constructed on Paraguayan territory, the road to be 1 meter gauge, allowing

20 meters on each side. The Government also concedes lands for stations and grades. The survey and plans are to be completed in eighteen months and the road in four years. The distance between Asuncion, Paraguay, and Santos, Brazil, over the proposed route is about 200 leagues. The distance across the Parana River at the proposed crossing is 500 meters. The idea prevails here that the concession has been sold to a Brazilian syndicate.

EDMUND SHAW,
Consul.

UNITED STATES CONSULATE,
Asuncion, September 11, 1891.

THE STATE OF DURANGO, MEXICO.

REPORT BY CONSUL FECHET, OF PIEDRAS NEGRAS.

RAILROAD-BUILDING IN DURANGO.

On September 15, 1891, the Mexican International Railway Company formally inaugurated the construction of its extension from Torreon (its present terminus), in the State of Coahuila, to Durango city, the capital and chief city of the State of Durango. The Mexican International is a standard-gauge road, extending from Eagle Pass, Tex., to Torreon, Coahuila, where connection is made with the Mexican Central system.

Mr. C. P. Huntington is president of the Mexican International, as well as of the Southern Pacific Company, and, while the charters, stocks, bonds, and organizations are entirely distinct and separate, there is necessarily harmony of action between the two companies, which apparently justifies the popular appellation of "Huntington system" which is frequently applied to the two companies.

The present line of the International, including its two branches, is 660 kilometers (410 miles), and the new line from Torreon to Durango will be 251 kilometers (155.96 miles). From Eagle Pass to Torreon there were no great engineering difficulties, and none will be encountered between Torreon and Durango. The heaviest grade on the present line does not exceed 1 per cent, and will not exceed 1¼ per cent on the extension. There will be no tunnels, no heavy cuttings, and a minimum of rock work. The new line will traverse a region of upland plains, generally well watered and fairly well timbered, and gradually increasing in elevation until Durango is reached, where the mountain region begins. The country is famed for its great salubrity of climate, and the health of the constructing force and of those who will operate the completed road will be in no danger from climatic causes. This extension will be constructed under the former concession of June, 1881, somewhat amended. The original line from the frontier at Piedras Negras to Torreon was constructed and equipped without any subvention, and this important extension will also receive no Government aid.

This is an important fact in the history of railroad-building in Mexico, and indicates that the Republic is nearing the time when the railroads still

needed for the more complete development of her vast resources will be constructed by corporations without burden to the federal treasury.

RESOURCES OF DURANGO.

The State of Durango, noted for its vast forests of hard and soft timber, its rich and fertile valleys, its extended upland ranges of grazing land, and its almost virgin mines of gold, silver, lead, copper, tin, and iron, has remained almost inaccessible, and hence has not received her share, based upon her wonderful natural resources, of the progress and development that has so markedly signalized the Republic in the past decade. Immense tracts of the finest timber lands in Mexico extend to the north and west of the city of Durango, and the trade in timber for building and in hard woods for the finer kinds of furniture, cabinet, and ornamental work must assume large proportions. While Durango is known to possess many valuable mines of the precious metals, only those of highest grade could be worked, on account of remoteness of situation. The question of profitable mine operation often hinges upon freights from the nearest railway station to the mines.

With a completed railroad to Durango city, situated as it is in the center of a mining region extending along the eastern slope of the Sierra Madre Mountains for many miles, the mining of the precious metals will undoubtedly receive a great impetus and must rapidly assume large proportions.

Right at Durango city is one of the most wonderful and extensive iron deposits of the world, the "Sierra Mercada," said to be almost a mountain of iron. The ore of this famous mountain is said to be magnetic (magnetite) and absolutely free from phosphorus, and hence especially adapted to steel manufacture by the Bessemer process. This property is now owned by a United States corporation composed of Michigan and Chicago capitalists.

In former reports I have called attention to the immense coal fields of Coahuila on the line of the Mexican International Railway and the high grade of coke produced. The full development of the Sierra Mercada iron deposits has been retarded by the absence of coal and coke adjacent to the iron-ore deposits and the commercial impossibility to pay wagon freights on coal and coke for 155 miles and return wagon freights on the iron product. The building of this extension will now unite Sabinas coal and coke and Durango iron and will make possible, and in fact certain, for the first time the establishment in Mexico of a new and most valuable industry—that of iron manufacture.

The production of pig iron from iron ores and the resulting development of the many attendant industries will be of incalculable benefit to Mexico, as at present Mexico buys all her iron and steel manufactures. From a full knowledge of Mexico's latest resources of coal and iron, now but on the eve of probable development, one is inclined to venture the prophecy that in ten years steel rails will be manufactured in Mexico. The large home market for all kinds of iron manufactures must speedily cause the erection of blast furnaces at some point between Durango and Sabinas, and there may follow factories to supply Mexico with industrial implements, machinery, etc.

Almost simultaneous with the building of this road, which will make possible the production of pig iron in Mexico by furnishing cheap coal and coke to the Durango iron deposits, comes the new Mexican tariff that raises the duty on pig iron to 3 cents per kilogram.

The city of Durango is the last of the old cities of Mexico to be united to the outside world by steel rails. With the great facilities offered by this connection the commercial importance of Durango must largely increase. It is already the center of large business interests. With through rail connections to the great seaports of the United States on the east a large trade that now goes to the Pacific coast at Mazatlan will find a speedier and cheaper outlet via the International road in Mexico and the Southern Pacific in the United States, instead of by water from Mazatlan to San Francisco or Europe.

In view of the fair possibilities of iron production in Mexico, as outlined in this report, it will be interesting to note the future action of Mexico in so changing her tariff to higher duties on iron and its manufactures as to attract to her territory factories and workers in iron and steel to produce within her own borders a proportion of the machinery and implements of all kinds so needful to the industrial development of the Republic.

EUGENE O. FECHET,

UNITED STATES CONSULATE, *Consul.*

Piedras Negras, October 5, 1891.

ENGLISH POTTERY AND POTTERY TRADE.

REPORT BY CONSUL BURGESS, OF TUNSTALL.

I have the honor to transmit herewith the annual return of declared exports from this consular district for the year ended September 30, 1891.

In reviewing the general conditions of the trade of this district, my attention will be confined almost entirely to a short report on the pottery industry, as that industry, in its various branches, supplies almost the entire export.

EXPORTS TO THE UNITED STATES.

Out of the total declared exports of $3,854,053.63 from this consulate, $3,815,798.33 represent various pottery wares, while out of the balance of $38,255.30, $24,674.12 are for materials used in the manufacture of pottery.

The entire district is filled with the numerous plants for the manufacture of every variety of pottery wares, from the commonest of glazed brick to the finest of china. Many suppose that the materials used in the body or glaze of the ware (*i. e.*, china, earthenware, etc.) are found in the immediate neighborhood. They are not; but materials of even greater value, as far as the bulk used and the amount of money annually paid is concerned, are found almost at their very doors, viz, coal and saggar marl, the latter being a cheap clay from which is made the cases in which the wares are burnt or

"fired." The district as a whole has not shown quite its accustomed activity; but, while this is true as to the trade generally, it is not true in regard to those manufacturing for the American market. The comparative figures for the several quarters of the fiscal year just closed show a slight decrease for three quarters from those of the preceding year and a slight increase for the quarter ended June 30, or a total decrease of $62,070.08; on the other hand, the number of invoices certified has increased from 4,864 last year to 5,116 for the present year. The above decrease of exports may be more apparent than real, for, through the operation of the administrative bill of June 10, 1890, invoices of value of less than $100 may be admitted without having attached thereto the consular certificate. There is no doubt that, had all the invoices between the amounts of $50 and $100 which have gone from this district been declared, the decrease of $62,070.08 would have been changed into a total increase.

The operation of the new tariff and administrative laws has not made any apparent difference in the exports from this district. Schedule B of the act of October 1, 1890, makes no change in the rate of duty on white and decorated china, earthenware, etc. The only difference is that made by the administrative bill in the restoration of part of the law enforced prior to 1883, viz, the charging of duty on packages and packing charges. Before the law of 1883 went into effect duty was levied, not only on the packages, but also on all costs and charges on the same at the ship's side at the point of shipment. The only question then is, what is the percentage of difference on an invoice of merchandise when the duty is levied on the package and when it is not?

I have taken five invoices of white granite from my files, which will give an idea of the real and exact percentage of difference under the new administrative bill:

Articles.	Value.	Increase.
	£ s. d.	*Per cent.*
Crate of assorted plates	15 14 3	4.76
Crate of assorted dinner ware	17 3 0	4.39
Crate of London teas	18 0 0	4.16
Crate of oyster bowls	20 0 0	3.78
Crate of dishes and bakers	27 19 0	2.75

All the above were discounted at 60 per cent, 5 per cent, and 5 per cent. The crates were charged 18*s.* 6*d.*, less 5 per cent and 5 per cent. I will extend the figures of the crate of oyster bowls, as it happens to be even £20.

	£	s.	d.
List price of ware	20	0	0
Discount (60 per cent, 5 per cent, and 5 per cent)	12	15	7
Net cost of ware	7	4	5
Charge for crate (18*s.* 6*d.*) and discount at 5 per cent and 5 per cent (1*s.* 9*d.*)	0	16	9
Total invoice cost	8	1	2

The duty under the old law was levied on the ware only at the rate of 55 per cent.

	£	s.	d.
55 per cent duty on £7 4s. 5d.	3	19	5
Net cost of ware	7	4	5
Net cost of crate	0	16	9
Gross cost of ware, duty paid and landed at New York	12	0	7

The duty under the present law is levied on the total cost of goods, packed ready for shipment, at the rate of 55 per cent.

	£	s.	d.
55 per cent on £8 1s. 2d.	4	8	7
Cost of ware and package	8	1	2
Gross cost of goods	12	9	9

The percentage of increase or actual difference is therefore 3.8 per cent.

The elements of freights, etc., are not taken into account, as, being the same in both cases, they would tend to increase the cost and so reduce the above actual percentage of increase.

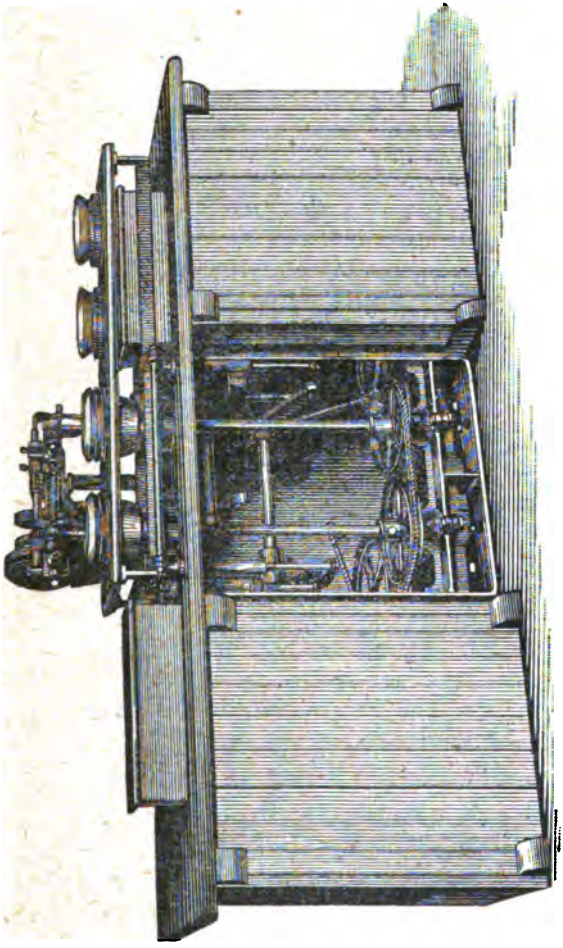
The above being the cheapest goods (with the exception of C. C.) shipped from this district, the finer class of white and decorated ware being of much greater value, the proportionate cost of the package is much less, and consequently the percentage of increase of cost landed at New York is much less.

The character of the goods exported has changed somewhat in the last year. The proportion of printed and decorated ware, as compared with the white, has greatly increased. The proportion of so-called "semiporcelain" ware has also very greatly increased as compared with the white granite.

Prices have remained about stationary, but with a tendency downward. In the case of white earthenware the prices remain where they were last year, but the selection of the goods has improved. The American customer, for the same money, is buying to-day a better selection or grade of goods than he was a year ago.

POTTERS' MACHINERY.

There has been little or nothing new in the way of labor-saving or cost-reducing machinery. There is one machine, however, although not of very recent design, which has, within the past year, come into considerable favor with the earthenware manufacturers here. It is known as Boulton's automatic double jigger and jolly. It is used for making cups, bowls, saucers, mugs, small jars, flower pots, and other like articles. The machine is self-contained and automatic, raising the molds last filled out of the heads, by the same movement picking up two new molds, slides the whole table along, placing the two filled molds on the raised bench and the new molds in the revolving heads; the scrap or surplus clay is also cut off at the top of the mold.



Boulton's automatic double jigger and jolly.

No. 136——7.

An American invention, in which oil (petroleum) is used for firing (burning) decorating kilns, has been very successfully tried at one of the largest potteries in the district.

LABOR AND CAPITAL.

Early in the beginning of the last fiscal year there arose mutterings of discontent on the part of the operatives with their low wages. There were signs, also, on the part of the manufacturers of the thought that they were paying too high wages; for they (the manufacturers), while casting about for reasons why their trade with the United States had not increased more rapidly, became aware of the fact that the importations into the United States from Germany had very greatly increased during the past five years, while the importations from England remained at about the same figure. The reason given for this state of things was that the wages paid in Germany for the same class of work were so much less than those paid in England that the Germans could land a better article in the United States for the same or less money. The demand on the part of the operatives was for a general increase of 10 per cent, while a like amount of reduction was demanded on the part of the manufacturers. The settlement of the matter was left, as is the custom here, to the board of conciliation and arbitration. The success attained in the amicable settlement of the labor disputes in the pottery industry through the ministrations of this board has been so great in the past as to warrant me in spreading fully upon this report the rules and regulations governing the Staffordshire potteries board of conciliation and arbitration.

RULES AND REGULATIONS OF THE BOARD OF CONCILIATION AND ARBITRATION.

RULES.

(1) That this board be styled the "board of conciliation and arbitration" for the Staffordshire china and earthenware manufacturers.

(2) That the leading principle shall be the continuance of work at existing prices pending any dispute. The decision of the board or umpire to date backward to the time of the appeal being made.

(3) The object of the board shall be to arbitrate on wages or any other matters affecting their respective interests that may be referred to it from time to time by the employers or operatives, and by conciliatory means to interpose its influence to prevent disputes and put an end to any that may arise.

It is, however, understood and agreed that under these rules neither employers nor operatives shall arbitrate on the following questions:

(*a*) Good from oven.

(*b*) Limitation of apprentices, except in the oven branch, and then only when a change is proposed to be made during the year at a manufactory in the proportion of apprentices to journeymen working together in a set.

(*c*) Alteration of trade rules.

(4) That the board consist of ten employers and ten operatives, four of each to form a quorum; and the first board shall hold their first meeting as soon as practicable after their appointment. The operatives to be elected by their own body, and the employers by their own body. The members of the board to serve for one year and to be eligible for reëlection. The new board to be elected in the month of July in each year.

(5) That the board shall, at its first meeting in each year, elect an umpire, president, and vice-president; also two secretaries, one for the employers and one for the operatives, who shall continue in office one year and be eligible for reëlection.

(6) That the board shall meet for the transaction of business once a quarter, namely, the first Monday in the months of October, January, April, and July; but on a requisition to the president, signed by three members of the board, specifying the nature of the business to be transacted, he, or, in case of his absence, the vice-president, shall, within seven days, convene a meeting of the board. The circular calling such meeting shall specify the nature of the business for consideration.

(7) A reference to the board may be made by either party to any dispute, but the primary obligation to appeal to the board shall rest upon the party who wishes to alter existing arrangements, subject, however, to rules 15 and 21.

(8) That no employer or operative shall be entitled to appeal to the board (except with the consent of the board), unless he has been a subscriber from the commencement of the current year of subscription.

(9) The parties to any dispute intended to be submitted to the board shall, if possible, agree to a joint written statement of their case; but, if they can not agree, a statement in writing on behalf of each party shall be made, and every such statement shall be sent to the secretaries at least two days prior to the board meeting. Each party shall have power to adduce oral evidence before the board.

(10) The umpire shall preside at the sittings of the board when cases are referred to it for arbitration which concern the whole trade or affect the interest of a whole branch. The question in dispute shall be decided by the umpire, whose award shall be final and binding on each party.

(11) That the president shall preside over such meetings of the board as are not convened for the purposes of arbitration, and in his absence the vice-president. In the absence of both president and vice-president, a chairman shall be elected by the majority present.

(12) That when at any meeting of the board the number of employers and operatives is unequal, all shall have the right of fully entering into the discussion of any matter brought before them, but only an equal number of each shall vote. The withdrawal of the members of whichever body may be in excess to be by lot.

(13) That the parties to any dispute which has been submitted to the board shall be bound by its decision.

(14) That each party shall pay their own secretary and separate expenses, but the joint expenses of the board shall be borne equally by the employers and operatives.

(15) A committee consisting of four, that is to say, two employers and two operatives, shall inquire into any dispute that may arise at any individual manufactory, and that does not affect the interest of a whole branch, and such committee shall use its influence in the settlement of disputes and have power to make an award. Before such committee shall commence to inquire into any dispute it shall appoint a referee, before whom the case shall be laid by such committee in the event of its being unable to adjust the business referred to it. The decision of the referee shall be accepted by both parties to the dispute. If such committee shall not be able to agree upon a referee, the umpire of the board shall make the appointment, and the case shall proceed. Such committee, however, shall not deal with any question which can not be dealt with under these rules.

(16) That, if any one or more of the board shall be immediately affected by the dispute, they shall not be appointed upon the committee referred to in rule 15.

(17) That the board shall recognize the trade rules set forth in the schedule as binding upon the parties to any dispute and for the regulation of the trade.

(18) That no alteration or addition be made to these rules except at a quarterly meeting or special meeting convened for the purpose. Notice of any proposed alteration shall be given in writing to the secretaries one month previous to such meeting, and the secretaries shall give one week's notice thereof to each member of the board.

(19) That it be an understanding in connection with the proceedings of the board that, while the general wages question, as it relates to the condition of the markets, shall be arbitrated upon (at Martinmas) as one case for all the trade, except ovenmen, each branch shall have a right at such arbitration to make special reference to any question or subject that especially concerns its interests or modes of working.

(20) That, when a general arbitration shall take place involving a reduction or increase of wages, the case in respect of all branches, except ovenmen, shall be dealt with as one, and, when the umpire has finished the hearing of such case, he shall then consider the case of the ovenmen and give to them a separate award.

(21) When there is no general arbitration at Martinmas affecting the interests of the whole trade, any two branches, but not more, may make a separate and special appeal to the board for change in prices on any special ground that may seem to them to justify such a change, and in like manner the employers shall be at liberty to claim an arbitration in case of there being a dispute with any two branches. Any dispute affecting more than two branches shall be dealt with as a subject for general arbitration.

(22) That the umpire shall have full opportunity to verify any figures or statements made in evidence, providing that such verification be not allowed to interfere with or expose the private business of any firm; such verification shall be made through a sworn accountant appointed by and responsible to the umpire, and shall be disclosed to no other person.

SCHEDULE—TRADE RULES.

(1) That in the absence of any specific agreement to the contrary the recognized custom of the trade shall be that four weeks' notice be given at any part of the year by an employer to discharge an operative, or by an operative to leave an employer.

(2) That the prices of labor mutually agreed upon at Martinmas in one year shall not be subject to alterations by either party until the Martinmas following.

(3) That, if new articles or new modes of working be introduced at a manufactory during the year, any disagreement as to price shall be referred for settlement to a committee to be appointed under rule 15.

(4) That, if either employer or operative intends to propose any alteration in prices or trade usage, he shall give to the other at least six weeks' notice in writing previous to the ensuing Martinmas, and such notice shall specify the alterations proposed; and, if the parties concerned can not agree to such alterations, the dispute shall be forthwith referred to the board. If the board's decision can not be obtained by the commencement of the trade year, the employer shall continue to employ the operative and the operative to serve the employer according to No. 2 of the board's rules, and the decision when given shall govern prices and trade usages for the trade year. If no notice of alteration be given within the prescribed time, the prices and trade usages shall continue for the ensuing year without alteration.

(5) When changes are proposed by employers at Martinmas which shall lessen the price paid by them for oven work, whether by reducing ovenmen's wages or by the substitution of less-priced hands, disputes arising from such proposed changes shall be considered legitimate questions to bring before the board, and in like manner, if the operatives ask for an increase in the price paid for oven work, it shall be considered a subject for arbitration.

That the usages in the biscuit warehouse shall be:

(*a*) That the operatives be paid for all ware which is spoiled through causes that do not come under their control, or that can not be traced to bad workmanship; but that no payment be made for bad work which can be proved to be the fault of the operatives.

(*b*) That, in all cases where defective work can be made good by a second firing, the operative shall be allowed that privilege.

(*c*) That all ware be counted to the operative before it be allowed to be taken out of the biscuit warehouse, and not later than the first full working day after drawing; but at manufactories where there is one biscuit oven only an additional day shall be allowed.

Perhaps I can in no more condensed way report upon the proceedings of this board during the past year's trouble than to copy a letter I wrote in answer to an inquiry on the subject, under date of June 17 last. It was in part as follows:

The story is a long one, and, if I were to attempt to narrate the whole of the proceedings, you would weary and your patience would be exhausted.

According to the rules governing the board, * * * "the prices of labor mutually agreed upon at Martinmas (November 11) in one year shall not be subject to alteration by either party until the Martinmas following, and that, if either employer or operative intends to propose any alteration in prices or trade usage, he shall give to the other six weeks' notice in writing previous to the ensuing Martinmas, and such notice shall specify the alterations proposed." These rules have been lived up to. The operatives, on the one hand, gave notice of a proposed alteration to the extent of advancing their wages 10 per cent, and employers gave a like notice to the operatives of a like reduction of 10 per cent. So the proceedings were duly opened in proper form. "The board consists of ten operatives and ten employers. * * * The members of the board to serve one year and to be eligible for reëlection." The arbitration committee met, but there immediately arose a question as to the qualification of one of the members of the operatives' committee, which, after several months of dispute and much newspaper controversy, was finally adjusted. The first arbitrators appointed were not satisfactory to one another. After numerous meetings of the board and committees of the board, the names of Messrs. James Mawdesley and Benjamin Stuart were finally settled upon as arbitrators and that of Harry T. Hinckes, esq., M. P., as referee.

Before this board of umpires the pros and cons were at great length set forth. All the facts were thoroughly looked into, and all the figures corroborated by an examination made by an expert accountant of the books of ten of the leading manufacturers. The result of their deliberations has only just been made known in the following letter dated June 10, 1891:

"We having carefully considered the evidence laid before us during the inquiry held at Stoke-on-Trent on the 12th, 13th, and 14th days of May last, are of opinion that it would not be advisable to make any alteration in the rate of wages now paid in those branches which were subjects of that inquiry.

"HARRY T. HINCKES.
"JAMES MAWDESLEY.
"BENJAMIN STUART."

The employers feel satisfied, and the men, of course, feel dissatisfied; but there seems to be no marked rejoicing on the one hand or brooding discontent on the other. There has been no cessation of operations during the seven months of the dispute, and neither masters nor men have thrown away efforts nor money in useless strike or lockout.

VALUE OF RAW MATERIALS.

The value of materials used by the pottery-manufacturers has remained, with a few exceptions, stationary during the past year. Coal is perhaps the most important of these exceptions. During the year ended September 30, 1890, there was a great advance in the price of this commodity, in some cases amounting to an advance of 30 per cent, or 80 cents per ton. The reason given for this advance was the great increase in wages paid to the colliers during the same period. Although there has been no reduction in the selling price of coal since the above date, yet I have learned of contracts having been made at a reduction of 25 cents per ton under last year's prices.

There has been a reaction in the price of lead of about $5 per ton. The greatest variation has been in the case of bone and bone ash. This material

is used largely in the manufacture of the fine English china ware. The supply market was "cornered," which enabled those having it to make the enormous advances of fully 40 per cent. The price has declined somewhat of late, perhaps 10 per cent; but it is still very much above the normal value. The supply of material has been adequate to the demand; but the very severe weather of the winter sadly interfered with the transportation of the bulky material, so much so, indeed, that the large majority of the manufacturers were forced to suspend operations. This was disastrous to the wage-earners.

CONDITION OF LABOR IN TUNSTALL.

The working people of this district can in no way be classed with or as the "pauper labor of Europe." Under ordinary circumstances their wages are equal to their needs; their wants being few, they are a happy and contented people; but, under the extraordinary circumstances of last winter's severe weather, the fact was brought out clearly of the fine adjustment of the balance of supply and demand; of wages received and moneys disbursed for necessary living expenses. There is little or no surplus. When the "shut down" had continued ten days, the towns and churches found it necessary to open soup kitchens and the like to keep those out of work from actual starvation. The suffering was great; but, as on all like occasions, the English people showed their genuineness of heart, their humanity, and the necessary funds were forthcoming, thus still greater suffering was warded off until winter was over.

COURTESY OF TUNSTALL POTTERS.

Before closing this report, I am constrained to acknowledge the courtesy, kindness, and respect shown to all your consular officers at this consulate by all with whom we have to do. I was also greatly gratified to find the willingness and readiness with which the manufacturers and shippers tried to, and did, adjust themselves and their business to the necessary changes resulting from the requirements of the new tariff laws, particularly in the matter of stamping, branding, or labeling, etc., their wares, also in the matter of the new declaration forms. The former was no trifling matter with the potter, as the stamping is done in an intermediate stage in the process of manufacture. Those having large stocks of goods on hand could not comply with the new requirements without going to very great expense; in fact, so great that no manufacturer could afford to do so. Therefore, both the manufacturers of this district and the officials of our customs department should be congratulated on the fact that these changes have been made and the requirements accomplished with so little friction.

Table showing the value of declared exports from the consular district of Tunstall to the United States during the quarters of the year ended September 30, 1891, with the increase or decrease over the corresponding periods of the preceding year.

Articles.	Quarter ending—				Total.
	Dec. 31, 1890.	Mar. 31, 1891.	June 30, 1891.	Sept. 31, 1891.	
Ale				$306.83	$306.83
Aluminium				501.51	501.51
Bricks (glazed)			$132.66	224.22	356.88
China	$52,335.56	$38,402.04	39,449.07	75,071.52	205,258.19
Cobalt	259.02				259.02
Colors	4,529.33	3,008.51	3,407.28	3,437.27	14,382.39
Earthenware	742,605.54	920,643.74	952,683.09	947,423.22	3,563,355.59
Glass	1,382.71	340.65	1,219.06	1,503.75	4,446.17
Hardware			932.66	150.26	1,082.92
Ink			1,773.98	3,109.47	4,883.45
Italian cloth	296.77				296.77
Lead, red	890.57	922.24		1,813.89	3,626.70
Lithographs			245.39		245.39
Parian	2,142.17	1,585.87	742.14	3,471.14	7,941.32
Paper	1,183.47	2,241.65	1,466.42	779.59	5,671.13
Porcelain	658.52	912.41	866.58	527.22	2,964.73
Potters' materials			330.72	248.19	578.91
Silk	239.86		358.07		597.93
Silica	155.97				155.97
Tiles	13,165.52	6,974.38	6,825.51	8,956.22	35,921.63
Tailors' trimmings	433.73	227.27			661.00
Webbing				559.20	559.20
Total	820,278.74	975,258.76	1,010,432.63	1,048,083.50	3,854,053.63
Total for preceding year	857,009.15	1,018,362.45	964,073.66	1,076,678.45	3,916,123.71
Increase			46,358.97		
Decrease	36,730.41	43,103.69		28,594.95	62,070.08

W. BURGESS,
Consul.

UNITED STATES CONSULATE,
Tunstall, November 6, 1891.

Toll tariff of Mexico.—According to information received at the Department from Mr. Dougherty, secretary of legation, the toll tariff of the federal district (city of Mexico) has been changed, and now reads as follows:

Rag paper, blotting paper, and wrapping paper, with the exception of colored papers for wrapping, 50 cents per 100 kilograms, gross weight.

Unsized paper, except for cigarette wrappers, etc., 50 cents per 100 kilograms, gross weight.

Colored wrapping paper of native manufacture and unsized paper for cigarette wrappers, etc., of native manufacture are exempt from all toll tax.

These changes went into effect on December 1, 1891.

BEET CULTURE IN GERMANY.

REPORT BY COMMERCIAL AGENT WASHBURN, OF MAGDEBURG.

In the introduction to a somewhat extended report on the sugar-beet industry, Dr. H. W. Wiley, chemist of the Department of Agriculture, remarks:

> The great problem in this country is the agricultural one. The selection of suitable soil, the finding of the proper climatic conditions, and instruction in the method of planting, cultivating, and harvesting the beets are all matters of vital importance. Without a careful study of these subjects, and without the proper knowledge thereof, it will be a hopeless task to introduce successfully the beet-sugar industry into this country. * * * If the sugar-beet industry is to succeed in this country, this success must come from sharp competition with the same industry in older countries, where its conditions are better understood and where the localities suited to it have been selected by long and often costly experience.*

It is not necessary to dwell upon the fact that Germany is one of these older countries where the conditions are understood—probably the best understood at present. The following report pretends to nothing more than an attempt to set forth succinctly what these conditions are, so far as they relate to this country. The information has been selected with some care from authentic and trustworthy sources.† In view of the decided impulse given to the sugar industry in the United States by the action of the last Congress and the general renewal of interest in the subject among our farmers and others, it is thought that a discussion of the subject now may be timely and possibly of some value.

CLIMATE.

Germany lies between the forty-seventh and fifty-fifth degrees of northern latitude. The section best adapted to the growing of the beet root is between the fiftieth and fifty-fourth parallels. The mean temperature ranges from 62° to 65° F. It is desirable to have moisture during the germinating period, heat and plenty of rain during the second period (that of growth), and dry weather and clear skies during the autumn. The saccharine richness of the beet is influenced more by this dry weather than by the heat. Hence the superiority of northern Germany to southern Germany, where the summers are longer and warmer. An abundant rainfall distributed through the first two months is highly advantageous. As the beet will have attained its growth in most cases by the middle of August, from this time on the weather should be clear, dry, and not too hot. The maturity of the crops is retarded by too much moisture and heat after this date. The quantity will be increased at the expense of the quality. The above topic, however, will be treated at greater length in a subsequent report.

*"The Sugar-Beet Industry" (bulletin No. 27, Department of Agriculture, Washington, 1890, pp. 6 and 7).

†In this connection I desire especially to return my thanks to Messrs. G. Schreiber & Son, seed-growers and manufacturers, Nordhausen, Germany, for their courteous invitation to visit their extensive seed farm and their kindness in placing at my disposal much valuable data.

SOIL.

It is possible to raise beets successfully in widely differing varieties of soil. Indeed, the testimony of recent experience has been to disprove that any one quality of soil is indispensable. Actual experiment must, after all, be the most effective test.

It has been found that beets are uniformly grown to the greatest perfection in soils containing a rich upper layer of loam, marl, and sand. No one of these constituents should greatly predominate, and they should be so mixed as to render the land neither too stiff nor too light. The subsoil should be porous and well drained, and the soil in general should be free from stones and acid-holding minerals.

Soils of clay may be profitably worked if rich in lime, kali, and phosphoric acid. A preliminary analysis should always be made to determine whether any one of these constituents is lacking and must be supplied. Clay that is cold and heavy can only be made productive by repeated applications of stable manure and by the addition of lime. For lime fertilizing there is a sort of lime mud, a residuum from the saturation process in the sugar factories, which is employed to good purpose.

Speaking generally, certain kinds of lands may be rejected at once. Boggy, peaty soils, and soils with water temporarily stagnant are not adapted to beets. Such land requires extensive artificial treatment. Drainage is necessary and sand soil must be added. Further, the land must be enriched with kali and phosphorus. Clover land, sheep pastures, lately grubbed forest tracts, and all saline soils should also be included in the list of unsuitable beet soils.

The position of a good beet field should be carefully selected. A level or a not too pronounced sloping surface is best, and, if possible, it should face the south. No fruit or shade trees or anything which robs the beets of sun and light should stand in the way; otherwise the crops will be slow in ripening and the beets poor in sugar. It is essential to select soil of good tillable depth. The roots penetrate deep in the earth, deriving much nourishment from the subsoil.

With proper care taken in the choice of a field, the rest will largely depend upon the method of cultivation. This includes proper agricultural implements, regular rotation of crops, and rational manuring.

PRELIMINARY WORKING OF THE LAND.

This is best begun in the autumn. Deep fall plowing and long exposure to the elements in this broken state tend greatly to improve the soil. Corn lands, after the second or third manuring, are best, and they should be plowed to a depth of from 12½ to 16 inches. The ground is then left until spring. Then, as soon as the weather permits, it should be harrowed and rolled. After the harvest of the corn it is advisable to turn in the stubble at once. For land which has been hitherto plowed shallow cultivation with the steam plow is not recommended, because deep plowing elevates too much

dead soil. This would be fatal to a good crop. Soils of this order should be plowed deeper.

ROTATION OF CROPS.

Too much stress can not be laid upon the necessity of a well-ordered and intelligent rotation. It is well known that the beet takes much from the soil and soon impoverishes it when successive crops are sown. No inflexible rule can be given for this rotation. It must be determined by the particular conditions governing each case, the situation, state of culture, sort of cereals each cultivator finds his land best adapted to, etc. In the best economics of this country there is a triennial or quadrennial rotation, depending upon the quality of the soil.

The triennial rotation is as follows:

First year—corn; fresh manuring with stable manure and phosphorus.

Second year—beets; powdered artificial manure and chemical fertilizer in addition to stable manuring.

Third year—barley or oats, without any manuring.

The quadrennial rotation is:

First year—summer corn; stable manure.

Second year—beets, with the same fertilizer as above. (Corresponding year of triennial rotation.)

Third year—barley or oats, with under-sown clover grass.

Fourth year—clover, lucern grass, vegetables, or fruits.

In some places the quality of the soil is so poor that a seven-years' rotation is advised, as follows:

First year—potatoes, peas, Indian corn, etc., manured with lime.

Second year—winter corn.

Third year—beets.

Fourth year—summer corn with clover.

Fifth year—clover.

Sixth year—winter corn with artificial fertilizing.

Seventh year—oats.

In no case should there be a succession of beet crops. It is to be observed, also, that beets are not to be planted the first year. Such a course would exhaust the soil and cause it to be infected with insects (*Nematoidea*).

MANURING.

It was formerly an unvarying prescription of manufacturers making contracts for the purchase of roots that the beets were not to be raised in freshly manured soil. At present all manufacturers are equally careful to contract that stable manure shall not be applied in the spring. Those manufacturers, however, who pay for the roots according to the percentage of sugar they contain object less to stable manuring in the previous fall, when the soil is in a good state of cultivation. It is true that the roots are likely to be largely impregnated with salt when this method is followed, but recent progress in the technic of manufacture is now so advanced that this disadvantage is

almost entirely nullified when the beets come to be worked up into sugar. As the salts increase the weight, manufacturers who pay according to weight do not, of course, depart from the long-established rule.

It is worthy of remark that the benefit arising from beet-root culture does not only lie in the crop of roots, but in the rational method of cultivation thus made necessary, the improved physical quality of the soil, and the higher percentage of crops of corn and other grains. To illustrate, crops of rye, wheat, and summer corn not infrequently increase from 30 to 40 per cent as compared to the time when no beets were cultivated.

The percentage of manure to be applied will vary in the different years according to the kind of manure employed. It should be borne in mind, however, that the effect of heavy manuring with dung is to produce leaves in great profusion and roots abnormal in size, but watery and hollow. If mixed stable manure be used, 40,000 kilograms may be applied to the hectare (about 16 to 17 tons to the acre) in the following proportions: First year, about 50 per cent; second year, about 35 per cent; third year, 15 per cent. Should the manure of cows be taken, from 50,000 to 55,000 kilograms may safely be used to the hectare (about 20 to 22½ tons per acre), distributed as follows: First year, 25 per cent; second year, 40 per cent; third year, 35 per cent.

In either case the manure should be plowed under in the fall. It is always safe to count upon a certain percentage of both stable manure and chemical fertilizer being lost to the plants through a tendency to spread into the undersoil and the danger of being washed away by rain on the surface.

The manure of sheep contains potassium and nitrogen in too large quantities. Rinsings, also, are not fit for fertilizing purposes.

As already observed, spring manuring is condemned. There are a variety of reasons for this. It is enough to say that the beets are generally late in ripening and contain a low saccharine percentage. There is further always the chance of a dry season, in which case the manure can not decompose. The most perfect beets are obtained during the second or third year of stable manuring. During this period the following suggestions are pertinent:

In the autumn, before plowing, fertilize the soil with fish guano in the proportion to 200 kilograms to the hectare (about 180 pounds to the acre). In the spring, about fourteen days before sowing, or at the time of sowing, add nitrogen—from 60 to 80 kilograms of saltpeter to the hectare (about 54 to 72 pounds to the acre) mixed with the same quantity of phosphoric acid in the form of superphosphate. The saltpeter and superphosphate should be ground together as fine as possible and spread uniformly over the field. It is important to put the fertilizer in at the proper depth. Opinions differ as to what this proper depth is, but about 8 English inches is a fair estimate. Chile saltpeter is given the preference for the plants. Unlike ammonias, it diffuses readily. Moreover, Chile saltpeter and Peruvian guano are potent factors in developing the maturity of the beet. Phosphoric acid, however, is most important as an artificial manure.

This prescribed manuring in spring promotes extraordinarily the growth of the roots and is regarded as indispensable in the first stages of growth. Experience has shown that roots so treated are more vigorous and better resist droughts and insects. The use of Chile saltpeter after the leaves have fully unfolded is very unwise. The reason is that thereby the roots grow over the soil, ripen late, and are poor in sugar contents. A moderate supply, however, immediately after the roots have been thinned out can do no harm.

Artificial manuring, to be really effective, requires observation and experiment. Careful preliminary preparation of the soil and careful distribution of the manure are first of all enjoined. Climatic considerations, such as the probable average of rainfalls, are important factors. The following rules may be safely followed:

(1) For sandy soils, larger quantities of Chile saltpeter can be applied.

(2) For mild and heavier lowland soils, normally moist, from 300 to 400 kilograms to the hectare (about 270 to 360 pounds per acre) are sufficient.

(3) Mountain soils, cold soils, and humid soils (those with underground water) are to be treated with trifling quantities.

(4) For unbroken meadows, as well as old clover fields, no Chile saltpeter should be employed, because they already contain nitrogen in sufficient quantities.

According to observations by Stutzer, by a judicious employment of Chile saltpeter—say about 90 pounds—835 pounds more of beets of good quality can be raised to the acre than by the use of an equal quantity of nitrogen in the form of ammonia. Some years ago it was the established practice to give to the soil larger amounts of phosphoric acid in the form of superphosphate and Thomas slag than was necessary in proportion to the quantity of nitrogen used. This had a precisely contrary result from what was anticipated. After a time it was observed that those beets which were fertilized with a surplus of sulphuric acid became prematurely yellow and feeble. This led to an increase in the use of nitrogens and a decrease in the use of phosphates. At present in beet fields in a high state of culture the proportion of nitrogen to phosphoric acid is about 2 to 1; in soils where there is little phosphoric acid a proportion of 1 to 1 is more effective. In breaking up meadow soils, as above mentioned, fertilizing with phosphoric acid without nitrogen is advised.

SEEDS AND THEIR SELECTION.

The choice of the best seeds possible is a matter of the utmost importance. Ten and fifteen years ago French seed ranked first and was generally favored by the most intelligent cultivators in Europe. This condition of things is now altered. The old German internal material tax is first of all responsible for this. By imposing a tax upon the raw beets according to weight the Government greatly encouraged the efforts of both manufacturers and cultivators to propagate a beet with the maximum of saccharine richness. Great persistence and accurate scientific experimenting had their reward, and now the German seed farmers not only supply the German cultivators,

but Austria, France, Russia, Belgium, and Holland as well. They are undoubtedly best equipped to supply the cultivators of our own country also.

The varieties perferred here are (1) the acclimatized Vilmorin, (2) the later Wanzlebener, (3) cross varieties of these two sorts. The old varieties, viz, the White Silesian, Imperial, Belgic, Russian, and Vilmorin Original, have practically disappeared in this country, because they could not satisfy the present high tests. They were either defective in form or inferior in sugar contents. Minute care should always be taken to select varieties which will attain the highest perfection in the given soil. The finest seed can not be expected to give good results in unsuitable soil. What is known as the *élite* seed always commands a higher price, but this is more than covered by the certain knowledge that the prospects of a good crop are advanced tenfold when the best has been selected. The majority of cultivators prefer buying their seed of first-class seedsmen to home raising.

Among the most favorably known and extensive seed-growers in Germany at present are Messrs. G. Schreiber & Son, of Nordhausen. All their seeds, as, indeed, those of other firms of the best repute, are subjected to a most rigid refining process, extending through a period of four years; and the size of their farm enables them to conduct their experiments on a very large scale. Dippe Brothers, of Quedlinburg, have also an enviable reputation.

The varieties most in favor have already been mentioned. Their characteristics are:

(1) *Vilmorin.*—This beet, as is well known, is of French origin. There are many subvarieties more or less important. The acclimatized German Vilmorin is of solid structure, white pulp, and with short, vigorous foliage. It resists especially well strong manuring with nitrogen, and is adapted not only to deep soils in a high state of cultivation, but also to meadows and clover stubble. Even in wet soils the sugar contents are good. This beet ripens late—about the middle of October—and is generally worked up at the end of the harvest. It is well suited to the strong soil and cold climate of the Hartz Mountains, in which district Nordhausen and Quedlinburg are located. The yield fluctuates from 28,000 to 36,000 kilograms per hectare (about 11.5 to 15 tons to the acre), and the percentage of sugar is from 16 to 20. For dry layers, sand soils, and elevated tracts the Vilmorin is not recommended, because it easily becomes too rooty. The drilling should be at a depth of about 17 inches, and the rows should be thinned out at a distance of about 8 inches.

(2) *The improved Klein Wanzlebener.*—The improved Klein Wanzlebener and its subvarieties are conical-shaped, full beets with a plentiful, vigorous leaf growth. It succeeds best in light clay or sand soils, ripens early, and gives a yield of from 38,000 to 50,000 kilograms to the hectare (about 15½ to 20½ tons per acre). The sugar contents range from 14 to 18 per cent. The ripening period is during the last of September and the first of October, and, in consequence, this beet is usually among the first to be manufactured into sugar. The Klein Wanzlebener will not do well in

soils freshly manured with stable dung, in newly broken meadows, clover fields, or in fields with moist subsoil. In light sand soils the beets should be from 12 to 17 inches apart; in heavy soils, in the best cultivation, from 9½ to 17 inches apart.

(3) *Schreiber's Specialitat.*—A good sample of the many mixed varieties is Schreiber's Specialitat. This beet has been evolved after many years of careful breeding and stands midway between the Vilmorin and the Klein Wanzlebener. It gives very satisfactory results in sugar contents and in acre production. In the early stages of cultivation this variety shows a red appearance, which is entirely lost with the later growth. The matured beet is white, solid in structure, and with a firm, slender form. It grows entirely in the soil, has a small head, and a short-stemmed, broad, curled leaf. Low lands or high fields are equally well adapted to this variety, but soils with underground water are unfit. The production fluctuates from 34,000 to 42,000 kilograms per hectare (about 14 to 17¼ tons per acre), and the sugar richness is from 16 to 20 per cent. The plants should be at a distance of from 9½ to 17 inches apart.

As to the plant distance in general, it may be said that the richer and more vigorous the soil the nearer together the roots should be. In a poor and shallow soil the distance should, of course, be greater. It is always well to have the roots as close together as the soil permits, because smaller heads are thus insured, the beets go deeper into the soil, and are richer in sugar.

SOWING.

As observed in another place, land plowed in the autumn should be gone over with a harrow and roller in the spring and prepared for the reception of the seed just as soon as the weather allows. The clods are thus broken up and the surface soil loosened and made even and smooth. The question of spring plowing has been the subject of much discussion and has developed a great variety of opinion. The weight of evidence is against it, however, one deep plowing in the autumn being regarded as sufficient. The moisture accumulating during the winter is likely to be lost when spring plowing takes place. The early drilling of the beets is strongly advised. A delay of three or four weeks may reduce the crop by one-third. In Germany the sowing is begun in the middle of April, if possible. The seeds are put in at a depth of about 2 centimeters (about four-fifths of an inch). The depth to which the seeds may be buried must depend, however, upon the temperature and the condition of the soil. When the temperature is low and the soil not permeable, there is a danger of the seed rotting, and more attention must be paid to the question of depth than is otherwise called for.

From 30 to 40 kilograms of seed per hectare (which is the equivalent of from 27 to 36 pounds to the acre) is the usual allowance. The exact proportion to the acre ought to be governed by the time of sowing. To illustrate, in the middle of April in this climate not less than 36 pounds to the acre should be sown. Unfavorable weather, devastation by worms, and

night frosts do not damage those fields closely planted to the same extent as those not so closely planted. The seed germinates best at a temperature of from 7° to 15° Réaumur. The soaking of the seed before drilling is not desirable in all cases. The quickly sprouting shoots easily perish, for instance, where dry weather is likely to ensue. Drilling on flat land is now the rule. In those sections, however, where the soil is cold and humid and where shallow plowing is necessary what is known as dam culture and the sowing of the seed in ridges is general.

Von Hodeck, a prominent German sugar-manufacturer, submits some interesting observations in this connection. The superiority of one method over another is largely a matter of climate. It is certain that ridges are more easily warmed by the diurnal heat, and also that they cool off more readily during the night. Perfectly flat surfaces retain the heat more evenly day and night. They further preserve the moisture better. Von Hodeck's experiments, however, have led him to prefer sowing in ridges. The advantages are earlier sowing, easier cultivation, and the soil covering the beet seed can be better compressed. This last is not unimportant, because upon its being sufficiently and properly done may depend a successful coming up of the crop and a satisfactory harvest.

According to von Hodeck, the seeds are best prepared for sowing in the following manner:

Put the seeds into a vessel or steeping vat and pour on hot water of a temperature at which one is able to bear the hand. To this water add petroleum in sufficient quantities so that the seeds will retain a pronounced odor. As the petroleum will not mingle with the water, it must first be mixed with milk, well shaken in a bottle to an emulsion, and then intermixed with the water. Carbolic acid instead of petroleum will not answer as well. It is likely to prejudice the germinating capacity of the seeds. After about twelve hours the water is drawn off and the seeds poured into a heap from 24 to 32 inches high, into which the thermometer is put. A cold or exposed locality should not be selected. A shed will answer the purpose. When the heap is heated to a temperature of from 20° to 22° Réaumur, it is then stirred with a shovel. This renews the current of air and cools the seeds. This stirring process is repeated as often as is necessary, *i. e.*, as often as the temperature rises to 20° Réaumur, until the sprouting begins. The seeds are then spread out and allowed to cool and dry up outwardly (otherwise they would stick together), after which they are ready for use. The more carefully these preliminary precautions are observed the sooner the springing up. Soaking the seeds in rinsings does no harm, but it also does no good. The incrusting of the seeds with sugar (*Candirung*) is a harmless pastime and will never have any practical value.

When in spring the field has been harrowed, ridges are formed at a distance of about 17 inches apart by means of a "ridge-former." These are in turn rolled with a tripartite roller, every part of which forms two beds. Attached to these rollers are small three-jointed clasps, fastened at a distance

of from 8 to 9½ inches apart, which mark the distance of the beets. This done the sowing follows, which is done either by hand or, preferably, by one of the many simple or compound drills especially adjusted for the purpose. If the beet tract be small, sowing by hand will answer, otherwise it is better to employ a machine. The improved agricultural implements required in sowing and cultivating manufactured in Germany may be obtained from Schmidt & Spiegel, Halle; F. Zimmerman & Co., Halle; or H. F. Eckert, Berlin.

The old rule in many places was, when plants were touched even slightly by night frosts, to plow them up and resow, the tendency of plants thus affected being to run to seed. This is no longer regarded necessary. The present higher percentage of seeds to the acre overcomes, in a great measure, this old drawback of early sowing. It seldom happens that any plants, save those on the outskirts of the fields, are damaged by frost. The others are effectually protected by thick sowing. In the event of a flood, however, it will be necessary to resow the crop.

CULTIVATION.

The first condition of good cultivation is not to work on wet soil. This rule may greatly decrease the number of working days, but it is best to adhere to it strictly. As soon as the rows become distinctly visible the cultivation should begin. This loosens the soil, invites a free circulation of air, and kills the appearing weeds. This first hoeing is difficult, because of the smallness and tenderness of the plants, and is best done by hand. If lack of workmen is likely to delay the work, it may be done with the cultivator, accurately adjusted. The important thing is to have the work done promptly. The first time the soil should be hoed at a distance of from 8 to 9½ inches from the plants.

The next step is the thinning out. This follows as soon as practicable, and is generally done by children, closely supervised and instructed to spare the most vigorous plants. Cultivation increases the size of beets. The frequent loosening of the soil and the influence of the air are essential to a high degree. To this end several hoeings are necessary, four at least; as often, in fact, as the time allows. As a rule, the shorter the intervals between them up to a certain period the better. The same precaution should be taken with the second hoeing as with the first—not to choke the tender plants with earth. At the time of the third it is presumed that the beets are sufficiently developed to allow of close and vigorous cultivating. The last hoeing should be undertaken at that stage when the leaves of neighboring plants do not touch and a workman can easily pass down the rows without damage. The soil is then free of weeds for the further growth of the plants. After the final hoeing no further special care is called for up to the time of harvesting, except that it is best to watch for and remove all seed stocks as they may appear. Hoeing by hand is preferable to the use of the

now prevalent cultivator, though it is conceded that the present improved construction of the machine is admirably adapted for doing excellent service in large fields. The cutting or pulling off of the beet leaves should always be discouraged, because a full leaf growth contributes to the quality and quantity of the crop.

ALBERT H. WASHBURN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Magdeburg, September 22, 1891.

BREWING IN IRELAND.

REPORT BY CONSUL REID, OF DUBLIN.

GOVERNMENT REVENUE.

The brewing and distilling industries have already afforded a prolific theme for discussion to doctors of morals, but, as no part of the duties of a consular official is supposed to run in this direction, I shall devote the following comments to the material phase of the question. That it is worth while is evident from the fact that, in this as in all other countries, a vast amount of capital and labor are employed in these lines, and a very substantial part of the public revenue of nearly every country is derived from this source. For example, I may say here that of the total revenue of the United Kingdom from all sources for the year 1890, amounting to $447,850,300, the excise revenue contributed more than one-quarter, or a net sum of $117,500,000. This latter sum does not include the large amount derived from the income tax from brewery and distillery owners and the direct tax upon the property employed in these industries. Of the latter amount Ireland paid more than one-sixth, or, to be exact, $21,894,000.

THE BREWING INDUSTRY.

That the people of the United Kingdom are emphatically a beer-drinking people a reference to the statistical returns will amply demonstrate—in fact, will show that this is their favorite beverage. That the brewing industry not only keeps pace with the local demands, but far exceeds the wants of the home market, a similar reference will prove. The official returns for 1890 give the product of the three divisions of the United Kingdom as follows: Ireland, 2,460,645 barrels; Scotland, 1,666,897 barrels; England, 26,740,773 barrels; total, 30,868,315 barrels. On this quantity there was an excise duty paid of 6*s.* 6*d.* per barrel, amounting in the aggregate to $45,742,000 of net revenue. Of this amount Ireland contributed $3,703,000. The brewing product in each of the three divisions has been quite uniform during the past ten years, the ratio of increase in each being nearly the same. For example, the increase in Ireland in 1890 over that of 1882 was nearly 500,000 barrels; in Scotland, a trifle more than 500,000 barrels; and

in England, about 2,000,000 barrels. The character of the brewing product in the three countries is worthy of note, and differs essentially from the principal products in the United States and Germany known as lager beer. Pale ales are mostly produced in England and Scotland, while the product in Ireland mostly consists of black beer, known as porter and stout. The essential differences between the two classes of products are: (1) In the production of the pale ales hard water is used, while soft water is exclusively used in the brewing of black beers; (2) in the production of the latter about 5 per cent of roasted malt is used for the purpose of imparting the desired color and flavor, for which this article is famous.

In Ireland the home product is the favorite beverage of the people, and is consumed at the rate of about 12 gallons per capita per year, which would amount in the aggregate to something over 1,500,000 barrels. In earlier times, or about three-fourths of a century ago, the demand in Ireland for porter was largely supplied by importations from England; but about that time the development of the industry in Ireland began to make great strides, and since then Ireland has been a large exporter, not only to England and Scotland, but to foreign countries as well. The annual exportations now amount to over 600,000 barrels.

The quantity exported to the United States for the year ended September 30, 1890, amounted in value to over $760,000. The exportations to the United States are almost entirely from Dublin; in fact, the shipments from this port to the United States are almost as great as the combined shipments from all other parts of the United Kingdom.

Nearly all of the export trade of Dublin, in respect to beer, is the product of the famous Guinness establishment, which is specially noticed in this connection. There are at present upwards of thirteen thousand breweries in the United Kingdom. Of this number Ireland has forty-three, and of the latter Dublin has seven. By far the most important brewing establishment, not only in the United Kingdom, but in the world, is that of A. Guinness, Son & Co. (limited), in this city. It is located on James street, in one of the older parts of the city. It was founded in 1759 by the ancestors of the present chief owner, Lord Iveagh. The growth of the establishment to its present proportions is something marvelous. During the first hundred years of its existence its products were mostly locally consumed. About 1860 it began to manufacture largely for the export trade, since which time this branch of the business has increased enormously, its products now being shipped in vast quantities all over the world. At that time the premises embraced about 4 acres, whereas at the present time the massive buildings and space otherwise utilized cover an area of 45 acres, and the capacity of the establishment is constantly being enlarged. In 1886 this brewery plant was merged into a limited-liability company with a paid-up capital of £6,000,000. What are called the ordinary shares are now worth more than three and one-fourth times their original value. These, with the other issues, represent a capital of about £12,500,000, or nearly $62,500,000. These

shares have a standing in the market second only to the best British Government securities, and are eagerly sought for by people of large and humble means as a desirable, safe, and profitable investment. The annual product of the establishment is upwards of 1,500,000 barrels of beer, or about one-twentieth of the thirteen thousand breweries contained in the United Kingdom. It pays a tribute to the Government every year, in the way of excise duties, of about $2,500,000. In the production of this amount of beer there is consumed 300,000 quarters, or 2,400,000 bushels, of barley per year, or about one-third of the total barley product of Ireland, which, for 1889, covered an area of 202,000 acres and represented an estimated value of £1,297,000. The value of the barley annually consumed in this establishment would therefore be about $2,160,000.

PROCESS OF BREWING.

It may not be uninteresting to the reader to briefly note the process of brewing employed at this establishment, without entering into the technicalities. The ingredients entering into the composition of stout and porter are malt, hops, and water, the latter being uniformly soft, of pure and excellent quality, and admirably adapted to this purpose, an item of great consequence. It is derived from the city water supply and is from mountain sources. The malt is largely made from Irish barley, but a considerable portion also comes from England, Scotland, and foreign countries. The hops used are grown in England, Germany, and the United States, the best quality coming from the State of Washington. When the barley is first received, it is subjected to experiments to ascertain its growing properties. It is then elevated to an upper floor, where it is thoroughly screened. It is then conveyed into a large cistern, where it is steeped in cold water for about sixty-four hours, the lighter foreign substances which rise to the surface being removed by skimming. The grain is then spread out upon vast concrete malt floors, where it remains eight or nine days and where the growing process takes place; thence it is conveyed to kilns, where it is treated for four days, the necessary degree of heat being communicated from below through perforated plates forming the floor of the kilns. From the kilns the grain is discharged into bins, from which it is caused to pass over magnetic feed-boards, which remove all possible pieces of metal. It then falls between crushing rollers, where it is crushed but not ground, being automatically weighed at the same time. The crushed malt now passes into the mash tuns (or keeves, as they are sometimes technically called, being large circular iron vessels which contain a suitable quantity of warm water), where it is beaten by revolving rakes and mixed into a thick mass. This process is repeated and continued for about twelve hours, the result of it all being the conversion of the starch of the malt into a saccharine substance. The resulting sweet liquid, known as wort, now escapes through perforated, or straining, plates forming the bottom of the mash tuns, into another series of huge vessels, known as underbacks. Hot water is then poured over the malt, in the form of rain, for some hours,

which process ultimately carries into the underback the remaining saccharine substance contained in the mash. The residuum in the mash tuns is used for feeding cattle. The sweet liquid, or wort, is then pumped into huge copper boilers, of which there are nine in this establishment, with a capacity of 600 barrels each. Here hops are added and boiled with the wort from one to two hours, with the result that a bitter flavor is given to the liquid, as well as preservative qualities, which are equally important. From the "coppers" the mixture is conducted into hop backs, which are provided with straining bottoms. The valuable substance still remaining in the hops is utilized by being boiled again with weaker wort, the product of which is mixed in suitable quantities with subsequent productions of strong wort, so as to secure a fixed standard of gravity. From the hop backs the wort passes to the pumps, by which means it is forced into cooling or measuring tanks, and from thence it is conducted through pipes to the refrigerating rooms. Here it is cooled by an artificial process to a degree necessary to secure proper fermentation by falling in uniform quantities upon the surface of upright refrigerators, consisting of walls of corrugated copper, between which constantly flows cool water. From the refrigerators the wort passes into the fermenting tuns, of which there are twenty-seven in this establishment, varying in capacity from 500 to 2,000 barrels each. Here yeast is added to facilitate fermentation, which continues about three days. The saccharine of the malt is thus decomposed, the result being the development of the alcoholic property and the liberation of the carbonic acid in the form of gas from the liquid. The carbonic acid in this establishment is now converted into liquid by pressure and forced into large metallic bottles. It is used for a variety of purposes, and, though ordinarily waste material, is now a source of considerable revenue. The liquid is then passed into huge tanks, called skimmers, where the yeast which rises to the surface is removed, a certain amount also settling to the bottom. When thus cleansed the liquor is conducted into large measuring tanks, and is afterwards pumped into vats, where it is stored for different periods, according to its quality and the market for which it is designed. The capacity of the establishment in this, as in other respects, is enormous. It contains one hundred and fifty of these vats, with a capacity of from 500 to 1,700 hogsheads each. From these vats the liquid is conducted by gravity through pipes to the filling room, where it is filled into casks of various sizes by ingenious labor-saving and economical devices.

The product of this establishment consists of four grades of beer, viz: Single stout, mostly consumed in Ireland; extra stout, for both Irish and English markets; export stout, brewed in the cool part of the season and shipped in bulk in casks; and foreign stout, shipped largely to the United States and elsewhere in bottles. The company itself does no bottling, but sells the product largely to other firms that make a specialty of this business. The principal exporters of foreign stout are E. & J. Burke (limited), of this city and New York, which firm has been largely instrumental in introducing

the product in the United States. When filled, the casks are rolled down inclined tracks to the loading stage adjoining, from whence they are started towards their various destinations. Those for local consumption are taken away in carts; a great deal is shipped by rail, the loading stage abutting a side track communicating with the main lines. The company's wharf, on the Liffey, is close by, where steam barges are loaded to convey the product to the cross-channel boats and frequently to the transatlantic vessels anchored further down the river.

MACHINERY, SHOPS, STABLES, ETC.

The foregoing is but a brief and very imperfect outline of the process of brewing. Of course, it can afford no conception of the establishment itself, which, in its entirety, is like a vast and perfect machine, each part working with the least possible friction and in the most perfect harmony with every other part, and all contributing to the final results for which the concern is famous throughout the world. The plant consists of two distinct breweries, each of which is equipped with the finest and most perfect machinery known to modern times, as well as with the most complete fixtures and appliances. Included in the outfit are freezing machines, with a combined capacity sufficient to produce 60 tons of ice in twenty-four hours. Of course, great regard is had to labor-saving arrangements throughout, which is of the utmost consequence where many thousands of tons of grain, malt, hops, liquor, coal, and a variety of other materials are moved every day. Of special importance in this line is the system of narrow-gauge railway, which ramifies the spacious brewery yards and communicates with the various buildings. Over this trains of small trucks, hauled by steam power, are moving all hours of the day and night, delivering and receiving materials where required. The extensive buildings are well protected against fire, there being upwards of 9 miles of water mains running through them, to which automatic sprinklers are attached in nearly every important department.

Among the many spacious buildings of the company is one for storing malt, containing one hundred and twenty-six bins with an aggregate capacity for holding 1,000,000 bushels. It is composed of brick, the walls at the base being about 4 feet in thickness. The enormous weight of the contents otherwise rests on a forest of metal columns. The hop stores are capable of holding 20,000 bales of hops.

The stables connected with the plant are very extensive. Besides a large number on hire, one hundred and fifty of the company's horses are constantly employed. These are the finest Clydesdales, of enormous weight, worth from £60 to £80 each.

The cooperage branch of a business like this is most important. In this department upwards of two hundred skilled hands and two hundred and fifty ordinary laborers are employed in the manufacture and repairing of casks. The company's disbursements for white-oak staves amount to about £15,000 (nearly $75,000) annually. The source of supply is now entirely from the United States, largely from Arkansas. The number of new casks manufac-

tured per week is about one thousand two hundred. The durability of heavy oaken casks is considerable, amounting to several years. Every time they are returned to the brewery they are thoroughly cleansed by the use of machinery, first by hot water and then by the application of steam. They are subsequently rinsed with cold water and then air-dried, being finally as clean and sweet as when they first left the coopers' hands.

The demands of this establishment are so enormous in many lines that the resulting incidental business has come to be of considerable importance. For example, the wants in that line are so numerous and constant that the company has found it necessary and important to operate its own machine shop. Accordingly, a large space is devoted to this purpose, which is fitted up with machinery adapted to the making of all sorts of repairs and the doing of some construction work as well. There is also a harness manufacturing and repairing department, and another devoted to the manufacture of heavy vehicles used in the business. The company has its own thoroughly equipped printing office, in which, among other things, upward of one hundred million labels are printed every year. All supplies for these incidental branches are purchased on a large scale, and are always available and subject to requisition at any time. Besides this, the company has coöperative stores containing the necessaries of life, at which supplies are sold to the operatives at a price only sufficient to cover cost, expenses of handling, etc.

CAPITAL AND LABOR.

In this connection it is proper to refer somewhat in detail to the fact that this great company seems to have mastered, in a large measure at least, the difficult problem now forcing itself upon the world as to the proper relations which should exist between capital and labor. It seems to have fully comprehended the first great factor involved in this problem, in that it is, as it should be, considerate of the interests of labor, as well as its own affairs, and apparently has devoted as much intelligent and broad-gauged attention to the former as to the latter. In the first place, the company pays the largest wages known in Ireland to its operatives, and has repeatedly advanced unsolicited the rate of wages when its profits warranted. In the next place, it provides a very large number of its employés with comfortable homes of its own construction, with due regard to the comforts which they should possess, and to sanitary considerations as well, and at a most reasonable rent. It has also long been the custom of this company to provide for the widows and children of the men who lose their lives in its employ by accident or otherwise. Each family receives its monthly stipend in sufficient amount for all purposes as regularly as before its head was taken away. Its monthly pension list amounts to a very large sum, and on the days of distribution a portion of the brewery yards fairly swarms with the widows and children of deceased employés. When I state that the force of operatives constantly engaged in this establishment is nearly two thousand five hundred, it will be understood that the resulting care, on humanitarian lines, to the company

involves a large expenditure of effort and money. It is proper to add, in this connection, that about a year ago the chief share-owner in this great concern, Lord Iveagh, gave $1,250,000 toward the erection of a better class of dwellings for wage workers, with the stipulation that $250,000 should be expended in Dublin and the remainder in London. Moreover, many thousands of pounds have been given by him to a variety of charitable objects here and elsewhere. This is a practical application of the highest "gospel of wealth," which subject has been under recent discussion by Andrew Carnegie, Mr. Gladstone, Cardinal Gibbons, and others. It is also pertinent to say that this broad streak of benevolence seems to run through the family, as the ancestors and contemporaries of Lord Iveagh, also connected with this establishment, have distinguished themselves in the same lines.

The result of all these genuine benefactions is that, while many other branches of business here and elsewhere are in a perpetual state of unrest, strikes are not only unknown in the Guinness establishment, but the laborers therein are contented and happy. The best class of help, skilled and unskilled, that the country affords is secured, and it is all as permanent as possible. In fact, the rule is that when men once enter the service of this company they continue as long as they are fitted for duty.

It is certainly not too much to say that a large share of the wonderful financial success that has attended this company is due to the far-seeing, broad-minded, liberal, and considerate policy which it pursues toward its labor. As a business enterprise it is one of the most thoroughly and comprehensively conducted of any that I have ever known, and the general lines of its policy, especially in its attitude toward labor, might be emulated with advantage by those who would give to the world a practical illustration of the fact that, notwithstanding the harangues of demagogues, the true interests of capital and labor are really identical, and that both thrive best when there is genuine and hearty coöperation.

The Guinness plant is entered through the company's spacious and magnificently appointed business offices, comprising the cash office, manager's office, board room, etc., in which a large staff of men is employed. By the management I was afforded every facility for collecting a large share of the data essential to this report.

The other brewing concerns in Dublin are those of John D'Arcy & Co., Joseph Watkins & Co., the Malone & Mountjoy Brewing Company, Phœnix Porter Brewery; Jameson, Pim & Co.; and Sweetman's. These several concerns brew stout or porter and do a large and thriving business. I have selected the Guinness plant for special mention, not only because of its great capacity, as compared with the Dublin establishments, but because it is the largest concern of the kind in the world, and also for the reason that its management possesses unique and interesting features.

ALEX. J. REID,
Consul.

UNITED STATES CONSULATE,
Dublin, May 1, 1891.

FRUIT AND VEGETABLE CANNING IN DENMARK.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

The yearly increasing demands for all kinds of preserved fruits and vegetables has been the means of instigating a forward movement in this country towards the preserving and canning of such articles. It seems to be now felt that the large sums of money which have been sent out of the country every year for the purchase of fruit, wines, dried fruits, and canned articles of every description might, in great part, have been kept at home if adequate attention had been devoted to the preparation of such articles, which, it is maintained, can be performed equally as well and at as low rates as the foreign manufactures now imported into the Kingdom. Hitherto the high rates of the sugar customs dues have greatly hampered all works of extensive character for the preparing of fruit sirups and preserves, wherein the price of sugar plays such an important part; but now that a reduction has been made in these dues it is assumed that an export trade of fruit sirups and preserves, and also of the different kinds of canned articles, may in the near future be opened up with different foreign markets to the advantage of this country. A factory in this line has already commenced operations; and, as the canning of various kinds of vegetables has already obtained a foothold in the home market, hopes are entertained of further success and development in the coming years in these branches of trade. It is well understood here that, although a market is still to be found in England for the best qualities of the Danish fruit, as well as of garden produce in a fresh state, it may be said to be confined to tree and bush fruits and to tomatoes; and it will be a matter of importance when foreign markets can be obtained for these products by means of home factory work. Looking for the means by which favorable results may be obtained to the fullest extent, it is strongly impressed upon agriculturists how necessary it will be that all such produce should be cultivated so that it can be delivered to the factory in good order, being in a perfectly sound and suitably ripened state and carefully sorted and packed. The berry fruits, such as black and red currants and gooseberries, when sent to the factory for preserving, must be well ripened without being overripe; and those berries intended for export should be picked somewhat earlier, so that the ripening can be completed during the period of transport.

Peas, of which very large quantities are now canned at the factory, are bought at the rate of 2 to 2½ cents per pound, according to quality, and "Fairbeard's Nonpareil" is strongly recommended to cultivators as one of the finest and best for preserving and one which always meets with a ready and remunerative sale. As regards fruits, it is also found that, with careful sorting, the good wares are always certain of obtaining the highest prices. Consignments arriving in a carelessly assorted state are seldom rated higher than second or third class fruit.

Of wild berries, a large quantity of bilberries, whortleberries, and cranberries are also preserved here. Canned asparagus, which has hitherto been imported in considerable quantities from Germany, is now being rapidly displaced by the home-grown article; and it is now seen that there is much further room for development in the cultivation of this article, which, in its canned condition, is year by year meeting with a greater demand and is one of the articles most easy of sale.

The canning of tomatoes is only carried on to small extent so far, while the exports thereof in a fresh state for the English markets continue to be very large and steadily on the increase.

There are thus sufficient varieties of produce from which the enterprising cultivator can make his selection towards promoting an increase of the raw material, but the factory-owners, at the same time, are also told that they will have to make every exertion to obtain a firm footing for their preserved and canned goods, not only in the home market, but wherever they may be placed with advantage in foreign markets; otherwise, with increased production, the home prices might be affected through a glut of produce, entailing serious loss both to cultivators and factories.

HENRY B. RYDER,
Consul.

UNITED STATES CONSULATE,
Copenhagen, October 6, 1891.

GERMAN CEREAL AND LIVE-STOCK STATISTICS.

REPORT BY COMMERCIAL AGENT WASHBURN, OF MAGDEBURG.

Table showing the production of cereals and potatoes in the German Empire in 1889.

States.	Rye.	Wheat.	Barley.	Oats.	Potatoes.
	*Tons.**	*Tons.**	*Tons.**	*Tons.**	*Tons.**
Prussia	3,676,425	1,323,267	922,086	2,999,494	16,936,440
Bavaria	627,654	401,709	450,529	536,542	3,266,407
Saxony	255,361	68,592	41,196	284,457	1,193,432
Würtemberg	35,320	29,417	101,904	133,874	645,545
Baden	45,145	40,090	68,307	66,155	648,812
Hessen	89,653	63,239	91,474	69,660	867,483
Mecklenburg-Schwerin	244,374	90,798	28,070	158,700	605,285
Oldenburg	66,290	9,887	16,093	48,162	138,897
Brunswick	67,147	40,573	18,851	62,820	260,497
Saxe-Coburg-Gotha	12,134	10,814	15,315	19,008	107,000
Anhalt	31,808	20,521	37,458	24,875	220,763
Bremen	2,387	315	410	2,000	12,760
Hamburg	4,721	2,302	376	4,682	8,722
Alsace-Lorraine	37,312	185,390	69,568	122,755	907,691
Remaining German states	167,675	85,499	76,782	163,940	784,231
Total	5,363,426	2,372,413	1,938,419	4,197,124	26,603,965

*1 ton of 1,000 kilograms = 2,205 pounds.

Table showing the average yield of grain per hectare in 1889.*

States.	Rye.	Wheat.	Barley.	Oats.	Potatoes.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Prussia	0.84	1.18	1.02	0.98	8.51
Bavaria	1.15	1.25	1.28	1.19	10.88
Saxony	1.2	1.36	1.3	1.53	10.03
Würtemberg	0.96	0.93	1.08	0.98	7.6
Baden	1	0.97	1.17	1.02	7.54
Hessen	1.41	1.6	1.65	1.56	12.87
Mecklenburg-Schwerin	1.46	2.08	1.58	1.41	14.18
Oldenburg	1.06	1.8	1.66	1.38	9.66
Brunswick	1.74	1.8	1.92	2.22	14.59
Saxe-Coburg-Gotha	0.96	0.98	1.19	1.08	10.38
Anhalt	1.09	1.89	1.95	1.59	11.67
Bremen	1.27	1.57	1.17	1.34	13.26
Hamburg	1.45	1.4	1.04	1.1	8.27
Alsace-Lorraine	1.03	1.02	1.19	1.49	10.46
Average	0.92	1.21	1.15	1.08	9.12

*1 hectare = 2.471 acres.

Table showing the total yield of grains from 1879 to 1889, inclusive.

Year.	Rye.	Wheat.	Barley.	Oats.	Potatoes.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1879	5,562,435	2,278,696	2,057,358	4,264,255	18,904,596
1880	4,952,525	2,345,278	2,145,617	4,228,128	19,466,242
1881	5,448,404	2,059,139	2,076,160	3,759,789	25,491,022
1882	6,390,407	2,553,447	2,256,355	4,508,056	18,069,332
1883	5,600,068	2,350,878	2,131,202	3,718,469	24,906,431
1884	5,450,992	2,478,883	2,229,598	4,236,665	24,019,601
1885	5,820,095	2,599,271	2,260,645	4,342,357	27,953,643
1886	6,092,849	2,666,423	2,337,206	4,855,894	25,143,229
1887	6,375,734	2,830,804	2,205,504	4,301,407	25,272,998
1888	5,522,740	2,530,842	2,260,590	4,647,583	21,910,996
1889	5,363,426	2,372,413	1,938,419	4,197,124	26,603,965

Table showing the importation of cereals by countries in 1889.

Countries	Rye.	Wheat.	Barley.	Oats.
	Tons.	*Tons.*	*Tons.*	*Tons.*
Russia	920,189	301,247	311,403	238,176
Austria	16,055	134,725	280,808	9,348
Netherlands	38,879	19,532	13,894	9,103
Belgium	22,119	13,460	5,692	428
United States	5,012	2,411	1,247	58
France	4,208	2,707	3,396	40
Other	53,269	42,805	34,982	851

Table showing the total importation of cereals in 1889 and 1890.

Description.	1889.		1890.	
	Quantity.	Value.	Quantity.	Value.
	*Tons.**	*Marks.*	*Tons.**	*Marks.*
Rye	1,059,731	113,444,000	879,903	98,093,000
Wheat	516,887	75,389,000	672,587	104,149,000
Barley	651,422	91,454,000	735,292	98,009,000
Oats	258,004	30,516,000	187,717	21,787,000

*Of 1,000 kilograms.

Table showing the importation of live stock in 1889 and 1890.

Countries.	Horses.	Cows.	Oxen.	Swine.
	Number.	*Number.*	*Number.*	*Number.*
Austria	9,300	19,089	7,687	123,920
Netherlands	7,598	19,853	.....	69,101
France	8,987	14,967	2,118	56,016
Russia	20,049	3	.....	44,557
Italy	12	53	2,415	21,786
Belgium	20,962	78	.....	5,736
Denmark	15,263	20,879	234	.....
United States	57	70	934	.....
All other	2,101	18,249	495	6,533
Total	84,329	93,241	13,883	327,649
Total for 1890	83,506	106,548	12,044	596,811
	Marks.	*Marks.*	*Marks.*	*Marks.*
Value in 1889	78,616,000	33,087,000	4,865,000	38,769,000
Value in 1890	72,005,000	39,917,000	4,381,000	75,188,000

Table showing the importation of swine from 1881 to 1890, inclusive.

Year.	Number.	Value.
		Marks.
1881	1,167,945	99,275,000
1882	1,039,136	100,795,000
1883	926,502	92,650,000
1884	759,207	75,921,000
1885	545,633	52,381,000
1886	568,570	54,014,000
1887	382,966	43,658,000
1888	291,799	35,599,000
1889	327,649	38,769,000
1890	596,811	75,188,000

ALBERT H. WASHBURN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Magdeburg, September 30, 1891.

GIBRALTAR IN 1890.

REPORT BY CONSUL SPRAGUE.

Navigation.—In regard to the navigation of the port of Gibraltar for the year ended September 30, I have to report a falling off in the number of steamships calling at this port since last spring.

Commerce.—There has also been a decline in the general trade of Gibraltar, the exceptional and very unfavorable condition of financial affairs both in Spain and Portugal having greatly contributed in depressing the usual commercial traffic in most all of its branches.

Finance.—The scarcity of gold coin has also caused exceptional rates of exchange to rule in those two Kingdoms, heavy amounts having to be remitted to the principal money markets of Europe to make provision for the payment of large sums due abroad for the settlement of coupons, railroad obligations, and a quantity of other outward debts and important outlays.

Although Spain exports more merchandise than she imports, still she is annually a debtor for fully $40,000,000 in gold; the balance in her favor in her foreign trade does not, however, exceed $10,000,000, hence the cause for this demand for gold while the depreciation in silver continues unabated.

It is generally admitted that Spain is progressing at home, though slowly. I very much apprehend, however, that the disasters which some of her provinces have lately sustained by storms and inundations, especially in the districts of Toledo, Murcia, and Almeria, which have caused very serious loss of life and property of every kind and description, will have a most disastrous effect on the public and private resources of the whole Kingdom for some time to come; indeed, it has been a severe blow to Spanish products and industries.

Cereals.—The unpromising accounts regarding the crops of cereals in vast portions of Europe have caused increased firmness in the demand for them. Barley and beans are at this moment of most current sale, to meet the local wants of this market, but the general advance in prices abroad limits operations to any great extent. As there are no surplus stocks on hand, it is generally thought that prices will rule higher as the winter advances. Most of the barley arriving here for sale comes from Algeria, and the beans from the Morocco coast.

Flour is one of the indispensable articles of consumption here, and continues to be moderately imported, chiefly from England. Some comes from France, Algeria, and the United States. Prices are gradually advancing as supplies decrease. It is evident from the present situation that large quantities of wheat will have to be imported into Europe from the United States, as the wants will be more important and general later on; the United States, having an abundance to spare, must eventually greatly profit thereby.

Coal trade.—Algiers and Malta are showing great competition against this port in the coaling business. They may eventually succeed, on account of the cheaper labor to be found in those two sheltered and convenient stations and the inducements which are offered there to owners of steamers to bring their trade thither.

Liquors.—Since 1887 the importation of wine has gradually decreased, while that of spirits and malt liquors has increased, the former since 1888 and the latter from 1885.

Tobacco.—Notwithstanding the rigorous restrictions which are being enforced by the Spanish authorities, aided in a great measure by the British Government and the employés of the tobacco company of Madrid, chopped tobacco, neatly packed in small, compressed paper packages, still seems to enter Spain daily through the neutral ground north of the rock. The packages of tobacco, after being inclosed in handy-shaped bales, are carted to the British lines by Gibraltar laboring men and there handed over to their respective Spanish owners, who, with a large staff, mostly boys, exert their ingenuity after sunset in passing them through the Spanish lines without being detected by the revenue officers on duty; and, strange to say, in spite of the apparent vigilance exercised by the latter, they are somewhat successful, which naturally gives room for great criticism.

Every evening the British authorities have a military patrol, under the command of two sergeants, on duty at the end of the Spanish road, who try to prevent the ingress of Spanish subjects after the first evening gun is fired; but it seems they meet with little or no success, as the so-called smugglers place the tobacco bales at a distance of 100 feet from the British lines, where they are, to a certain extent, free from being molested by either party.

The quantity of this smuggled tobacco, hidden in the towns and villages in the southern provinces of Spain, is reported as being much reduced, and that, in consequence, prices have advanced considerably. This naturally stimulates those engaged in this illicit traffic to increased activity, with the expectation of obtaining corresponding profits.

Italian emigrants.—Since the month of July the number of emigrants on foreign steamships that have called at this port from Italy and Sicily, bound to the United States, has materially decreased. During the month of August the number dwindled down to 516, but last month it was 1,800, of whom 774 were destined for New Orleans, having arrived direct from Palermo, Sicily.

The emigration from Italy and Spain to Rio de Janeiro and Buenos Ayres seems to have lately somewhat revived, chiefly by first-class French steamships, which have conveyed, on some occasions, nearly two thousand passengers each trip. The steamers leave from Marseilles and afterwards call at Genoa, Barcelona, Malaga, and this port on their way to Brazil, where, it would seem, better prospects are now offered to emigrants than in the other South American republics.

Fortifications.—The newly erected fortifications on the summit and extremities of the rock being nearly completed, the mounting of improved heavy-rifled pieces of ordnance has continued with increased activity. A corresponding supply of ammunition has also been conveyed to different parts of the rock to meet the requirements of these new works.

It is now mooted that there is a probability of the stringent restrictions which have been in force ever since these new works were commenced being somewhat relaxed before long, thereby permitting the inhabitants of Gibraltar and tourists to ascend the rock up to the signal station, as heretofore—a renewed privilege, which, when granted, will be greatly enjoyed by those who seldom leave this residence.

Most of the infantry regiments of the line quartered in this garrison have lately been provided with the magazine rifle recently adopted by the British war department, which is to supersede the Martini-Henry rifle in the British army. This magazine rifle, though somewhat heavier in weight, is said to be a very superior weapon. It is so called from a small magazine, or *cartouche*, containing several cartridges, the musket being already loaded with one, which, on being fired, raises another cartridge into the discharge position, and so on, without any manipulation whatever, until the whole are exhausted. Its advantages are said to consist in a much longer range, a more certain aim, owing to a more reliable adjustment of sights, and a decided superiority in destructive power. The bullet is much smaller and somewhat more elongated than the old one, and is supposed to reach its object in a direct line, without being subject to those deflections which were considered so serious a defect in the old weapon; neither is the recoil so strong as that of the Martini-Henry rifle. The bayonet is also much shorter, affording facilities in the use of the arm which seem entirely absent in the old. Such seems to be the general opinion of military men here relating to this new weapon.

HORATIO J. SPRAGUE,
Consul.

UNITED STATES CONSULATE,
Gibraltar, October 1, 1891.

RIGHTS OF FOREIGNERS IN MEXICO.

REPORT BY SECRETARY OF LEGATION DOUGHERTY.

Replying to instruction of October 21, 1891, I have the honor to report that, in a personal interview with Mr. Mariscal, I inquired what changes, if any, have been made in the laws of Mexico relating to the rights of foreigners in this Republic, more particularly as respects the holding of real estate, since June, 1885, at which date a statement of the then existing Mexican legislation upon the subject was printed in one of the United States CONSULAR REPORTS. Mr. Mariscal replied that, as well as he was able to state from

memory, no important change has been made since that date, but that, for the sake of greater accuracy, I had better send him the consular report referred to. This I did with my note of the 12th ultimo. Mr. Mariscal has just replied, giving a complete résumé of the legislation upon the subject as it exists to-day, all of which is inclosed.

C. A. DOUGHERTY,
Secretary of Legation.

LEGATION OF THE UNITED STATES,
Mexico, December 1, 1891.

MR. MARISCAL TO MR. DOUGHERTY.

[Inclosure in Mr. Dougherty's report.—Translation.]

DEPARTMENT OF FOREIGN AFFAIRS,
Mexico, November 13, 1891.

ESTEEMED MR. DOUGHERTY: In reply to your unofficial note of yesterday, I have the honor to advise you that the note of the Secretary of State T. F. Bayard, found on page 199 of the CONSULAR REPORTS you sent me, contains some inaccuracies, for the limitations to the right of foreigners to acquire real estate as obtaining at time of the writing of the said note and as obtaining now are defined in articles 158 to 161 and 216 of the "Codigo de Extranjeria de los Estados Unidos Mexicanos" (Code of the United Mexican States on Foreigners), compiled and published by Señor Don Manuel Azpiroz. They are further similarly defined under the law on foreigners and naturalization of May 28, 1886, which embraces all the modifications made to the laws determining the rights and obligations of foreigners in Mexico subsequent to the year 1885, which latter law, in its thirty-ninth article, derogated the provisions requiring matriculation.

Herewith I return to you the aforesaid CONSULAR REPORTS, and also send to you a copy of the law on naturalization and a copy of the articles quoted from the code on foreigners.

I am, etc.,

IGNO. MARISCAL.

ARTICLES OF THE CODE IN RELATION TO FOREIGNERS.

[Translation.]

ARTICLE 158. Without previous permission from the President of the Republic, no foreigner can acquire real estate in any frontier State or territory within a limit of 20 leagues from the boundary line.

ART. 159. Foreigners are likewise positively prohibited from acquiring real property within 5 leagues of the coast.

ART. 160. Any foreigner desirous of obtaining the permission intimated in article 158, should address a petition to the department of public works indorsed by the governor of the respective State or territory.

ART. 161. In connection with town properties, or lands adjacent to such towns, to be acquired, the present occupants or lessees shall enjoy the right of appraisement.

ART. 211. Naturalized citizens of Mexico can not denounce unappropriated public lands within any State or territory adjoining the country of their birth or naturalization.

ART. 216. The acquirement of unappropriated public lands situated in any frontier State or territory is absolutely forbidden to the native citizens of adjoining nations or to the naturalized citizens thereof.

SPANISH WINE.

REPORT BY CONSUL BOWEN, OF BARCELONA.

Many French papers have recently claimed that the annual production of wine in Spain amounts to but 29,000,000 hectoliters, of which quantity they say Spain requires 20,000,000 hectoliters for her own consumption and from 4,000,000 to 5,000,000 hectoliters for distilling and for vinegar, so that only 4,000,000 hectoliters remain for exportation; but they add, as a matter of fact, that double that quantity is exported. They consequently asseverate that the wine is adulterated with German alcohol.

These claims are very important, inasmuch as the treaty between France and Spain will soon terminate and a *modus vivendi* must be agreed upon in case France refuses to permit the existing treaty to operate until a new treaty may be made. The French Government shows at the present time a disposition to refuse the continuation of the existing treaty and to demand of Spain a *modus vivendi* that will in no way be prejudicial to France, but will at the same time increase the duty on Spanish wine from 2 to 6 francs per hectoliter. The object of the French papers is to show that the real amount of Spanish wine imported into France is small, and that the French will lose but little if the *modus vivendi* is not established, and that the Spaniards will lose but little if the *modus vivendi* proposed by France is established. Spain claims that the figures in the French papers are grossly erroneous, and that her material welfare depends largely on the duty imposed on her wine by France. Señor J. M. A. de Beraza, who was the secretary of the jury of the Exposición regional del Este de España, held in Madrid in 1874, declares that in that year the production of wine in Spain amounted to 30,000,000 hectoliters, and he states as an indisputable fact that the annual production of wine in Spain is now as follows:

Provinces.	Quantity.	Provinces.	Quantity.
	Hectoliters.		*Hectoliters.*
Cantabrian provinces	175,008	La Mancha	2,880,000
Leon	2,246,000	Valencia	5,810,000
Navarre	3,060,000	Basgue provinces	3,872,000
Old Castile	3,240,000	Balearic Isles	367,480
Aragon	4,190,000	Canary Islands	9,000
Catalonia	8,220,000	Total	*38,793,488
Estremadura	930,000		
New Castile	3,800,000		

*1,024,815,572 gallons.

What the sugar and tobacco questions are to Cuba, the wine question is to Spain—an economical-political question, capable of developing into an international question.

HERBERT W. BOWEN,

UNITED STATES CONSULATE, *Consul.*

Barcelona, October 31, 1891.

FOREIGN COMMERCE OF JAPAN IN 1890.

REPORT BY CONSUL-GENERAL TILLOTSON, OF KANAGAWA.

I have the honor to submit the following report upon the trade of Japan and this consular district for the year ended December 31, 1890:

Owing to the unusual fluctuation during the year in the value of silver, it has been somewhat difficult to arrive at correct equivalents in United States currency of the value of merchandise reported in the official returns of trade. In converting the yen into such currency throughout this report I have taken it as equivalent to 79 cents, that being about its average value for the year, according to the imperial customs estimates.

The total volume of trade was as follows: Exports, $44,716,769; imports, $64,565,578; excess of imports, $19,848,809. As compared with the year 1889, this shows a decrease of exports of $7,063,401 and an increase of imports of $15,034,390.

One of the principal reasons for this falling off was the very short crop of rice, the great staple product of the Empire, in 1889, followed by a diminished yield of barley, rye, and wheat, with consequent high prices for food throughout the country. The smaller yield of silk than for the two previous years, the poorer markets abroad for silk, and the exceptional fluctuations in exchange, caused by the changing values of silver in the United States and Europe, furnish other reasons for such a state of trade.

To show the effect of the short crop of rice, which required an import of grain instead of an export, as in normal years, the net import for 1890 was valued at $8,596,285, against a net export in 1889 of $5,473,640, making a difference against 1890 of $14,069,925.

Concerning the trade with the United States, it may be noted that one feature that has attracted my attention is a marked increase in the import of raw cotton—2,366,099 pounds in 1890, as against 95,204 pounds in 1889 and 84,257 pounds in 1888.

Kerosene comes in rapidly increasing quantities, and does not appear to be affected by the competition of the Russian article. A falling off is noticed in the sale of clocks, and but little improvement appears under the head of machinery and metal manufactures.

The export of tea shows an increase of 3,568,061 pounds over 1889.

The following were the movements during the year of specie and bullion:

Description.	Imports.	Exports.
Silver	$663,888.35	$9,551,831.36
Gold	284,591.47	1,333,208.65
Total	948,479.82	10,885,040.01

Customs duties were collected as follows:

On exports	$1,132,601
On imports	2,316,783
Miscellaneous	96,439
Total	3,545,823

The following tables set forth the details of the trade and navigation:

Table showing the total foreign trade of Japan by countries during the year 1890.

Countries.	Exports.	Imports.	Total.
Great Britain	$4,454,794	$21,029,091	$25,483,885
United States	15,658,936	5,430,880	21,089,816
Hongkong	7,399,461	4,341,771	11,741,232
China	4,129,721	6,991,251	11,120,972
France	6,599,971	3,056,772	9,656,743
British India	466,721	7,039,604	7,506,325
Germany	669,068	5,416,995	6,086,063
Korea	988,063	3,447,197	4,435,260
Australia	628,085	264,048	892,133
Belgium	50,576	815,557	866,133
Canada	808,024	20,270	828,294
Switzerland	8,791	678,302	687,093
Russia	194,586	367,079	561,665
Philippine Islands	155,826	201,834	357,660
Italy	169,290	101,708	270,998
Austria	242,615	19,079	261,694
Turkey	2,709	241,644	244,353
Siam	16,828	178,389	195,217
Denmark	71	59,309	59,380
Holland	14,567	18,336	32,903
Spain	5,638	15,703	21,341
Hawaii	19,940	211	20,151
Peru		8,799	8,799
Portugal	953	5,034	5,987
Sweden and Norway	9	1,180	1,189
Other countries	2,031,527	4,815,534	6,847,061
Total	44,716,769	64,565,578	109,282,347

Table showing the value of exports to foreign countries from Japan during the year ended December 31, 1890.

Articles.	Value.	Articles.	Value.
Silk:		Camphor and camphor oil	$1,556,785.06
Raw	$10,817,737.81	Matches	1,176,332.91
Waste and cocoons	2,404,825.57	Rice	1,045,573.69
Tea	5,625,447.80	Drugs, medicines, and dyes	680,793.56
Metals:		Oil and wax	283,038.83
Copper	4,231,654.75	Books and paper	218,137.96
Other	492,243.47	Skins, hair, shells, etc	179,332.37
Coal	3,788,910.31	Tobacco	106,323.73
Textile fabrics	3,374,977.17	Miscellaneous	2,422,368.31
Curios	2,630,659.71	Total	44,716,769.74
Grain, beverages, and provisions	1,976,447.28		
Dried fish	1,705,179.45		

Table showing the value of imports from foreign countries into Japan during the year ended December 31, 1890.

Articles.	Value.	Articles.	Value.
Textile fabrics	$23,116,783.29	Provisions, wine, beer, and cigars	$1,203,695.35
Grain and seeds	11,307,234.45	Books, paper, and stationery	764,146.46
Sugar	6,706,316.32	Clothing and apparel	652,568.44
Arms, instruments, clocks, watches, machinery, and vessels	5,826,671.86	Glass and glassware	311,558.62
Metals and manufactures thereof	5,316,351.61	Miscellaneous	2,673,622.28
Kerosene and other oils	4,145,728.03	Total	64,565,578.99
Drugs, medicines, dyes, and paints	2,540,902.28		

Table showing the value of declared exports from the consular district of Kanagawa to the United States during the year ended December 31, 1890.

Articles.	Value.	Articles.	Value.
Silk, raw	$6,691,164.93	Plants and bulbs	$11,151.33
Silk goods	1,605,392.13	Menthol	10,910.14
Silkworm eggs	750.00	Mushrooms	5,507.59
Tea	2,829,928.11	Oranges	2,175.37
Curios	434,195.07	Fish	429.39
Sulphur	198,214.78	Miscellaneous	20,544.07
Straw braid	36,210.71	Total	11,896,399.72
Paper and paper goods	28,015.22		
Rags	21,765.88		

Table showing the nationality, number, and tonnage of vessels engaged in the coastwise trade of Japan during the year 1890.

ENTERED.

Nationality.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
United States	2	6,254	11	17,500	13	23,754
Japanese	463	539,494	*1	91	464	539,585
British	497	862,007	3	3,475	500	865,482
French	53	128,453	.....	.....	53	128,453
German	77	110,865	.....	.....	77	110,865
Total	1,092	1,647,073	15	21,066	1,107	1,668,139

CLEARED.

United States	2	6,254	10	15,681	12	21,935
Japanese	464	542,171	*1	91	465	542,262
British	562	964,522	2	2,900	564	967,422
French	52	126,106	.....	.....	52	126,106
German	83	118,666	.....	.....	83	118,666
Norwegian	1	1,367	.....	.....	1	1,367
Total	1,164	1,759,086	13	18,672	1,177	1,777,758

*Not including junks.

Table showing the nationality, number and tonnage of vessels engaged in the foreign trade of Japan during the year 1890.

ENTERED.

Nationality.	Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
United States	20	54,020	33	44,923	53	98,943
Japanese	252	250,027	*778	23,374	1,030	273,401
British	492	819,439	50	52,412	542	871,851
Korean	4	741			4	741
French	26	62,946			26	62,946
German	225	194,740	11	10,165	236	204,905
Norwegian	26	20,556			26	20,556
Swedish			2	148	2	148
Russian	22	27,860	3	210	25	28,070
Total	1,067	1,430,329	877	131,232	1,944	1,561,561

CLEARED.

United States	20	54,020	37	52,717	57	106,737
Japanese	365	325,822	*954	38,635	1,319	364,457
British	421	710,607	52	55,507	473	766,114
Korean	2	472			2	472
French	26	63,160			26	63,160
German	214	182,346	12	12,502	226	194,848
Norwegian	23	17,294			23	17,294
Swedish			2	134	2	134
Russian	22	27,860	3	210	25	28,070
Total	1,093	1,381,581	1,060	159,705	2,153	1,541,286

*Including junks.

W. D. TILLOTSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Kanagawa, September 3, 1891.

FERTILIZERS IN JAPAN.

REPORT BY VICE-CONSUL STOUT, OF NAGASAKI.

Inquiries have been made in accordance with the list of questions propounded by the Department in regard to the fertilizer trade, but it does not appear that commercial phosphates are used at all in this part of Japan. The inquiries have, however, brought to light the fact that animal and vegetable substances are extensively dealt in as fertilizers. In central Japan there is a large trade in dried fish, brought mostly from the northern islands. In this consular district bones and bean cake are the chief articles. In the south, in the province of Satsuma, the bones of fish and animals have been used for nearly a hundred years; at first, raw bones, then ashes and scrapings from the manufacture of bone articles. Later, the bones were reduced to

powder in stamping mills run by water power. This is the practice at the present time. The consumption of bone dust is said to amount to 50,000 tons a year. These figures seem very large for a single province of the size of Satsuma; but there is no doubt that the article is extensively used. The supply comes largely from China and Korea. The bone dust, ready for the farmer, brings from 25 to 30 yen a ton (a yen is equal to about 80 cents in gold).

In the provinces of Hiogo and Nagasaki bean cake is much used. This is the residuum from an oil-producing bean or pea, and comes exclusively from China and Korea. The custom-house returns for this place report about 9,000 tons for last year, valued at 200,000 yen.

Bean cake is admitted free of duty, but bones pay an ad valorem duty of 5 per cent.

It is proposed to establish a company in Nagasaki for dealing in these articles. Should this be done, a ready medium for the introduction of any articles that might supplement those now used or take their place would no doubt be found.

In addition to the fact indicated herein, that Japanese farmers are ready to pay for fertilizers, it may also be said that they are not reluctant to try experiments.

These facts are given with the hope that they may be of service to those interested in the commercial phosphate trade, as indicating whether they can expect to find a field for the sale of such articles.

HENRY STOUT,
Vice-Consul.

UNITED STATES CONSULATE,
Nagasaki, September 28, 1891.

COCHIN CHINA RICE TRADE.

REPORT BY COMMERCIAL AGENT FONSALES, OF SAIGON.

Since my last report prices have remained stationary during three weeks, but within the last few days a rise has occurred, the foreign demand having become more active and the market stock reduced. Abundant rains have fallen, and the field works are being conducted under favorable circumstances.

The steamship *Canton*, of the Compagnie Nationale de Navigation à Vapeur, has left for Marseilles with 33,825 piculs of various sorts of rice and the *Cleveland*, a British steamer, has sailed for Dunkirk with 45,509 piculs of cargo rice containing 20 per cent of paddy.

The exports from January 1 to September 12, 1891, amounted to 5,817,664 piculs, as compared with 6,996,576 piculs during the corresponding period last year.

A. FONSALES,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Saigon, September 12, 1891.

COMMERCE OF NEW-CHWANG.

REPORT BY VICE-CONSUL BANDINEL.

IMPORTS.

There was an increase in almost every item of trade during the past year, owing to the abundant pulse and grain crops in 1889 and 1890. The most striking instances were American sheetings, which are preferred by the dealers to any other textiles, and cotton yarn, which is much used in the manufacture of homespun goods. Metals also show a great increase, due partly to the improved circumstances of the agriculturists and partly to extensive purchases of lead and iron for the arsenal at Kirin.

Sugar and luxuries generally bear witness by their increase to the general prosperity of the district.

There is a marked decrease in wheat and rice, owing to the abundance of the local food supplies.

American kerosene oil shows an increase of 300 per cent; a large proportion of this was imported via Japan, and was liked better than that which came via Shanghai. Russian oil has fallen from 17,700 gallons in 1889 to 1,000 gallons in 1890.

Speaking generally, it is satisfactory to note that, of a total import during the year 1890 valued at $9,019,294, at least $1,484,108 came originally from the United States, and there seems to be no reason why this proportion should not be maintained, or, perhaps, increased, in future years.

EXPORTS.

Beans and their products—cakes and oil—show a great increase over last year's figures, the short shipments in the autumn of 1889 necessitating correspondingly large shipments in the spring and summer of 1890, and the large crops in that autumn prevented any falling off towards the end of the season. As a consequence, the figures for the two first-named items are the largest in the customs returns since the port was thrown open to foreign trade.

Wild silk has again been largely exported, prices having been unusually reasonable throughout the year.

Skins have done badly. Large stocks remained unsold in Shanghai at the commencement of the season, and buyers here declined to operate unless at a great reduction. The skin dealers thereupon decided to send some of their number down to Shanghai in charge of their goods, which they thus placed direct upon the Shanghai market. This experiment resulted in heavy loss and will probably not be repeated.

Owing to the floods in Chihli, large shipments of grain have been made to the flooded districts; but I am unable to give any figures, as they were not passed through the foreign customs.

NAVIGATION.

The ice broke up on the 9th of March. The first steamer came in on the 17th and the first sailing vessel on the 22d; the last sailing vessel left on the 25th of November and the last steamer on the 30th. Ice appeared in quantity on December 10, and the river froze across on the 29th.

This year's figures, when compared with those for 1889, show an increase of 21 sailing vessels and 8,383 tons and 80 steamers and 67,297 tons, being a total increase of 101 vessels and 75,680 tons.

Several charters were effected here towards the end of the season at rather better freight rates than were offered elsewhere.

FRED. BANDINEL,
Vice-Consul.

UNITED STATES CONSULATE,
New-Chwang, March 13, 1891.

BRITISH PIG IRON.

REPORT BY CONSUL BRUCE, OF LEITH.

The following table shows the production of pig iron in Great Britain for the six months ended June 30, 1891, compared with the previous two half years:

District.	Total production to June 30, 1891.	Increase or decrease as compared with—			
		Six months ended December 31, 1891.		Six months ended June 30, 1890.	
		Increase.	Decrease.	Increase.	Decrease.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Scotland	493,000	225,457			37,790
Cleveland	1,320,063		116,896		89,067
Cumberland	342,051		28,801		58,688
Lancashire	344,281		1,748		44,514
South Wales	358,007		32,653		73,363
Lincolnshire	121,910	14,467		3,064	
Northamptonshire	97,824	36,153			14,877
Derbyshire	139,329		48,761		52,156
Notts, Leicestershire, and other districts	134,003	53,722		49,480	
North Staffordshire	114,039	8,080			28,260
South Staffordshire and Worcestershire	172,378		9,960	1,955	
South and West Yorkshire	124,291	8,988			8,986
Shropshire	24,634	2,221		3,963	
North Wales	26,977		4,148		6,438
Total	3,812,787	349,088	242,967	58,462	414,319
Difference		106,121			355,857

WALLACE BRUCE,
Consul

UNITED STATES CONSULATE,
Leith, September 30, 1891.

GROWTHS OF CITY POPULATION IN GERMANY.

TRANSMITTED BY CONSUL-GENERAL EDWARDS, OF BERLIN.

[From the Hanover Courier of September 27, 1891.—Translation.]

That the great cities are exercising a strong attractive influence upon the country population is well known. While this movement is partially due to a desire for employment, various other causes also underlie it. Among these causes the chief are the dissipations and pleasures, and also the beneficial advantages, to be found in cities. The great increase in the population of the large towns, as compared with that of the small towns and rural communities, is therefore due to immigration, the former gaining and the latter losing. The natural increase of population through the excess of births over deaths is about the same in the large cities as in the rural communities.

Concerning the state of affairs in Prussia, the reports of the royal statistical bureau show that on December 1, 1890 (when the most recent census was taken), there were in Prussia 205 towns having over 10,000 inhabitants, of which 1 had over 500,000 (Berlin, with 1,579,244), 15 had from 100,000 to 500,000, 12 from 50,000 to 100,000, 64 from 20,000 to 50,000, and 113 from 10,000 to 20,000.

In the year 1801 the number of towns in Prussia with over 10,000 inhabitants was only 137; this increased in 1875 to 158, in 1880 to 176, in 1885 to 196, and in 1890 to 205.

If the entire population of the Prussian state be compared with the number of persons residing in towns having a population of over 10,000, a disproportionate growth of the large towns will be found, as in every 10,000 inhabitants of the entire Prussian state there lived, on an average, in towns having a population of over 10,000 on December 1, 1871, 1,789; 1875, 2,022; 1880, 2,227; 1885, 2,477; 1890, 2,770; and in towns of 100,000 and upwards, in 1871, 518; 1875, 650; 1880, 751; 1885, 1,017; and 1890, 1,329. This shows that the growth of the largest towns has been much more rapid than that of the towns having between 10,000 and 100,000 inhabitants.

The increase in the population of towns having 10,000 or more inhabitants varied, however, very much in the period from 1885 to 1890. In Berlin it amounted to 20.07 per cent; in the other towns having more than 100,000 inhabitants, 15.51 per cent. Of these, Magdeburg increased 26.83 per cent, while Dantzic's increase was only 4.92 per cent. The rate of increase in towns having from 50,000 to 100,000 inhabitants was 19.2 per cent, the increase in Charlottenburg amounting to 81.43 per cent, while in Posen it was only 1.93 per cent. In the towns having from 40,000 to 50,000 inhabitants the increase was 15.73 per cent; in Spandau it was 41.72 per cent and in Liegnitz only 8.09 per cent. In the towns having between 30,000 and 40,000 inhabitants the rate of increase was 14.72 per cent; in Harburg it was 33.32 per cent and in Coblentz only 3.16 per cent. In towns having from 20,000 to 30,000 inhabitants the increase was 9.17 per cent, the increase in Gelsenkirchen being 38.17 per cent, while in Wesel it was only 0.29 per cent, and in Viersen, Nordhausen, and Stralsund there was a decrease of 0.12 per cent, 0.85 per cent, and 4.01 per cent, respectively. In the towns having from 15,000 to 20,000 inhabitants the average rate of increase was 12.04 per cent, being in Allenstein 96.47 per cent and in Celle only 0.64 per cent, while in Eupen and Schleswig there was a decrease of 0.06 per cent and 0.35 per cent, respectively. In the towns having between 10,000 and 15,000 the average rate of increase was 9.75 per cent, in Recklinghausen 52.68 per cent and in Sommerfeld 0.34 per cent, while in nine towns there was a decrease, which was, at least, only partially apparent, as the 30th of November, 1890 (the day preceding that on which the census was taken), was Sunday, and on Sundays large numbers of workmen leave the towns and do not return until Monday morning.

LABOR IN AMOY.

REPORT BY CONSUL BEDLOE.

LABOR AND WAGES.

Amoy is the metropolis of the great Chinese province of Fo-Kien. The province is said to have a population of 35,000,000, of which over 1,000,000 belong to the city and its numerous suburbs; it has a large commerce, its exports and imports in 1890 amounting to $19,000,000; it has a passenger traffic by steamer of 125,000 persons per annum; it possesses large and successful fisheries in its bays and the waters along the coast; it is the trade port of the tea, sugar, and camphor industries of Formosa; in the surrounding province is a numerous and thrifty agricultural community; it has manufacturing interests of great variety and value.

Labor finds a good market in Amoy, that is, from a Chinese standpoint. The rates of wages and salaries are about 10 per cent higher than in the adjacent cities and towns, and the cost of living is no higher, if, in fact, it be not lower. A careful study of the economic resources of the district and the tendencies of modern trade show a still further increase in the advantage and condition of the working people. While they show a prospective decline in the influence and business of European and American merchants, they indicate that the decrease is merely a transfer of trade from them to Chinese competitors. The many industries of Amoy and the monthly wages or salaries paid to those engaged therein are shown in the following table:

Table showing the monthly rates of wages in Amoy.

Occupation.	Rate.	Remarks.
Artificial-flower makers	$5.25	
Awning-makers	15.00	
Bakers	11.25	
Bakers' apprentices	2.00	Are allowed a small amount of what they prepare.
Bamboo-workers	7.50	
Barbers	3.00	Those who have European customers realize about $6.
Bell-hangers	7.50	
Binders	14.10	
Blacksmiths	7.25	
Boat-builders	11.00	
Boatmen	4.00	When employed by Europeans are supplied with clothes.
Boiler-makers	7.80	Employed usually in European shops and yards.
Book-keepers	11.50	
Book-pasters	6.00	
Book-sewers	6.00	
Box-makers	7.50	
Brass-founders	6.50	
Brass-workers	6.20	
Brewers	14.00	Must understand Chinese pharmacy to practice their trade.
Bricklayers	5.50	
Brick-makers	5.50	
Brush-makers	5.15	
Buffalo-keepers	3.00	

Table showing the monthly rates of wages in Amoy—Continued.

Occupation.	Rate.	Remarks.
Buffalo-keepers (boys)	$0.50	And board.
Buffers	5.00	
Butchers	9.00	
Butlers	9.00	
Butter-makers	3.50	Chiefly employed by Europeans; the Chinese use little or no butter.
Button-makers	6.00	
Cabinetmakers	9.00	
Cane-chair makers	7.59	These chairs have no nails.
Cane-makers	5.00	
Carpenters	8.50	
Carpet-makers	6.50	Weave rugs out of colored wool and cotton, or both.
Carvers	9.00	
Chair coolies	3.80	
Cigarmakers	5.00	Very few in number. China can not compete with the cheap Malay labor in the Philippines.
Cigarette-makers	6.00	
Confectioners	11.25	
Cooks (domestic)	6.50	
Coopers	6.50	Amoy coopers line baskets with oil paper and oilcloth and use them for holding all ordinary liquids.
Cutlers	6.50	
Dairy hands	4.00	Very few in number; dairies only for European use.
Diggers	4.50	
Distillers	14.00	
Dressmakers	10.50	
Drug clerks:		
In Chinese stores	7.50	
In European stores	12.00	
Dung-collectors	3.00	Employed by farmers to obtain manure, which is gathered and transported by hand.
Dyers	7.00	
Embroiderers	7.00	
Engineers	11.00	
Engravers	7.00	
Envelope-makers	4.00	
Farm hands	3.10	And also board and lodging.
Firemen	4.50	
Florists	6.00	
Forge hands	7.00	
Foundrymen	7.00	
Furniture-makers	9.00	
Furriers	10.25	Very few in the Amoy district. The trade belongs to North China.
Gardeners	6.00	
Gigmen	4.00	
Gilders	5.50	
Glassblowers	9.00	An industry that does not prosper. The workmen do not possess the strength or skill requisite.
Glaziers	5.00	
Glue-makers	5.25	
Granite-cutters	7.00	A very large industry, owing to the granite formations of the country.
Grinders	6.00	
Grocery clerks	7.50	
Goatherds	3.00	
Guards	4.00	
Guides	4.25	
Hatters	6.00	
Hod-carriers	4.50	A basket and ladle replace the hod used in the United States.
Horse boys	3.00	
Horseshoers	6.25	
Hostlers	4.00	Hostlers are generally employed at so much a month for their own and the horses' feed together.
Housekeepers	15.00	
House-painters	9.00	
Ink-makers	6.50	
Iron-molders	7.00	

Table showing the monthly rates of wages in Amoy—Continued.

Occupation.	Rate.	Remarks.
Jade-carvers	$7.50	Few in Amoy. The trade is Cantonese, where it is followed by thousands and is one of their great industries.
Janitors	4.00	
Jettymen	7.50	
Jewelers	7.50	
Joiners	9.00	
Kite-makers	7.00	There is always a demand for kites. They are used by the old men and middle-aged men, as well as by boys.
Knife-grinders	4.00	
Laborers	4.00	
Lacquerers	9.00	
Lamplighters	2.00	Usually a porter or chair coolie at other hours.
Lamp-makers	6.50	
Lantern-makers	6.25	
Lasters	5.50	
Laundrymen	4.00	Have no laundries. They wash clothes at public wells, ponds, and streams.
Lighter hands	4.50	
Limestone-cutters	7.80	
Locksmiths	7.50	Make as well as apply locks, keys, padlocks, etc.
Machinists	6.00	
Masons	6.25	
Masons' tenders	3.00	
Mat-makers	7.25	
Messengers	6.00	
Milkmen	3.80	
Millers	5.40	Use hand power in making flour and meal, or rather foot power, as they stand on a beam which raises the pestle.
Millwrights	7.50	
Molders	7.00	
Night watchmen	3.75	
Oil-pressers	5.00	
Oil-boilers	5.75	
Opium-boilers	7.50	
Opium-pipe makers	6.75	
Opticians	11.75	A very honorable occupation and often followed by the learned.
Out runners	3.75	
Painters	9.00	
Paint-makers	7.00	
Paper-bag makers	4.50	
Paper-makers	5.50	
Pattern-makers	7.00	
Pavers	4.50	
Pen-makers	5.00	Chinese pens are fine bamboo brushes of pigs' bristles.
Pewtersmiths	5.50	
Pigskin-workers	5.25	
Pilots	12.00	Employed chiefly by European vessels.
Pipe-makers	6.00	
Pipestem-makers	5.00	The stems are made from reeds, bamboo, and other vegetable growths.
Plasterers	6.20	
Plumbers	6.25	
Porters	4.50	
Potters	7.50	
Printers	9.00	
Raftsmen	4.50	
Rattan-splitters	7.00	
Rattan-workers	7.50	
Rickshawmen	4.00	Rickshaws are comparatively recent institutions in China, but are now used in great numbers.
Robe-weavers	7.50	
Roofers	6.25	
Room boys	5.00	

Table showing the monthly rates of wages in Amoy—Continued.

Occupation.	Rate.	Remarks.
Ropewalkers	$9.00	
Saddlers	11.50	
Sailmakers	15.00	Men who work exclusively upon canvas. The chinese use sails made of bamboo, rattan, and grass. These are made by bamboo and pattern workers.
Sailors	6.00	
Sampan (native boat) makers	10.00	
Sauce-makers	6.00	
Shenam-workers	5.25	Shenam is a kind of Portland cement used in tile work, and also in boat-building.
Shepherds	3.00	
Ship carpenters	7.50	
Ship-painters	7.40	
Shoemakers	5.80	
Shroffs	6.00	A shroff is a Chinese clerk, whose duties are partly those of book-keeper, collector, and cashier.
Sign-writers	10.30	
Silversmiths	7.50	
Soapstone-carvers	8.00	
Soapstone-wedgers	5.50	
Steeple jacks	11.00	
Steamship hands	9.00	These supply their own provisions, but the cooking is done gratuitously for them by the ship's cook. Sometimes they contract with the latter for their daily meals.
Steamship sailors	9.00	
Steamship stokers	9.00	
Steamship quartermasters	13.50	
Stevedores	7.50	
Stewards	7.00	
Stocking-makers	6.70	Stockings are cut and sewed from cotton cloth and resemble half boots in general shape and appearance.
Stonecutters	7.50	
Sword-makers	6.75	
Syces	3.75	
Tailors	10.00	
Tanners	6.00	Tanners are also food manufacturers, as the pigskin of commerce is used as much to make confections as to make leather.
Teachers	12.00	
Tea-bag makers	6.75	
Tea-box makers	6.70	
Tea-casers	6.50	
Tea-lead men	6.50	
Tea-packers	6.50	
Tea-pickers	4.50	
Tea-root carvers	4.60	The tea plant has large, knobbed roots, which are worked into grotesque figures by these carvers.
Telegraph linemen	6.70	
Telegraph operators	24.00	
Thatchers	4.00	
Tilers	5.50	
Tek-pai hands	4.50	A tek-pai is a bamboo raft used on dangerous bars and shallow waters.
Tile-makers	5.50	
Tent-makers	15.00	
Tin-foil makers	5.00	
Tinners	5.50	
Trunk-makers	10.00	
Umbrella-bearers	4.00	Employed by mandarins and high officials.
Umbrella-makers	9.00	Must be able to make umbrellas after European, Chinese, and Japan models.
Wagon-makers	7.00	
Watchmen	3.75	
Weavers	6.50	
Wood-carvers	8.00	
Wood-engravers	8.50	Do most of their work in making characters for printing.

The average workman receives $5 a month. Out of this he supports himself, his wife, and children. It is almost impossible for him to save anything, because any surplus is swept away by the first sickness. For this reason there are no savings banks in Amoy; in fact, there are very few in China. In this manner the life of the workingman is very limited. He has a position to fill; if he does not fill it, he dies of starvation, and from it, no matter how long or how hard he may work, there is no hope of anything higher.

This absence of ambition, far from depressing, seems to act as an exhilarant. The workingman is happy, playful, and social. He flies kites, plays shuttlecock, indulges in mild practical jokes upon his friends, goes to bed early, and has as good a time as his few resources will permit. If he is single, he spends his income religiously, and, if married, gives it to his wife, who is the treasurer of the family. If he has more than one wife, No. 1 is almost always the custodian of his wealth.

The family income is increased in many small ways. First is the universal pig. He is the domestic animal *par excellence* among the working people. He, or rather she, sleeps in the vestibule, and, when the house is too small to possess this luxury, in the living room. The pig recognizes her name and displays in her intelligence the inherited results of centuries of training. She litters twice a year. Of her offspring, the males are fattened and sent to the market and the females are sold or kept for breeding purposes. The pig is fed at every meal of the family; the rest of the day it forages for itself in the streets, fields, drains, and on the beach. At low tide hundreds are often seen devouring seaweed, dead fish, and the flotsam and jetsam of the sea. The wife and children gather driftwood, edible sea moss, sea fungus and seaweed, small shellfish the size of a pea or bean, mushrooms and tree mushrooms, aromatic leaves for flavoring purposes, dead branches, dry leaves, dead grass and grass roots, cow dung, and animal droppings. What they do not care to use they sell for a few copper cash or barter with neighbors and tradesmen for rice and vegetables. In this manner a woman and several children will provide all the food for a family and leave a small surplus to put by for a rainy day. Some wives who are good cooks do a small business in catering, others turn an honest penny in sewing, embroidery, tailoring, and dressmaking. Small boys earn a few cents by marching in religious processions to funerals, wakes, exorcisms, weddings, and other ceremonies. At 8 years of age the boy begins his life's calling, which usually is the same as his father's and grandfather's. There are no laws against child labor in China. They begin to work as soon as they walk. A boy or girl at 4 years of age will carry the baby "piggy-back" half an hour at a time and mind it from dawn till dusk. They also hunt up the pig when he is lost, lead the water buffalo, or tend a herd of sheep with almost the same success as a grown man. They work in the garden, bring water from the wells, destroy locusts, caterpillars, and slugs, pull out the weeds, and in every way show themselves excellent horticulturists in miniature.

FOOD PRICES.

The markets of Amoy will compare favorably with those in any part of the world. The climate enables the farmers and kitchen gardeners to raise the produce of both the tropical and temperate zones. The China Sea is notoriously rich in fauna and flora and offers an unending variety of foods to the housekeeper. Freight steamers bring the alimentary products of other parts of the East with great regularity and dispatch.

The soil is fertile and produces from two to six crops a year, according to what is sown. As a result good, wholesome food is very cheap.

Following are the prices of the leading articles in season, the minimum being quoted:

Table showing the food prices in Amoy.

Articles.	Prices.	Remarks.
Vegetables:		
Asparagus.....per pound..	$0.01 to $0.02	Chinese asparagus is poor and woody, and has a perceptible diuretic influence.
Beans—		
Broad.....do...	.01¼	These four kinds of beans are classes rather than species. The Chinese have given much attention to this useful vegetable and have developed at least twenty different varieties. A good example of their success is shown by the Fuchau broad bean, which is the shape and size of an almond, with a rather pleasant flavor of chestnut.
Kidney.....do...	.02	
String.....do...	.02	
White.....do...	.01½	
Dried.....do...	.03	
Beets.....do...	.02½	
Brussels sprouts.....do...	.05	
Cabbage—		
Young.....do...	.01½	
Old.....do...	.01	
Preserved.....do...	.01	Made by drying, salting, and compressing small heads. They are packed in earthenware jars and will keep for years.
Carrots, young.....do...	.01	
Cauliflower.....do...	.02	
Edible sea fungus.....do...	.02	
Edible sea moss.....do...	.01	This resembles the Irish moss that is used as a food by many of the Irish peasantry
Edible seaweed.....do...	.01	
Eggplant.....do...	.02	
Lettuce.....do...	.01	
Lentils—		
Green.....do...	.01	
Dried.....do...	.01½	
Marrow.....do...	.05	The marrow and gourd family are very numerous and are used for both culinary and medicinal purposes. The bitter marrow, or foo-qua, is an agreeable febrifuge.
Millet.....do...	.02	
Mushrooms—		
Fresh.....do...	.50	
Dried.....do...	.60 to .70	
Parsnips—		
Young.....do...	.03 to .06	
Old.....do...	.03 to .05	
Parsley.....do...	.02 to .05	
Peas—		
Sugar.....do...	.02 to .03	Smaller, sweeter, and finer than the one in the United States. It is never shelled, but is cooked, served, and eaten in the pod.
Green.....do...	.02 to .04	
Dried.....do...	.03	

Table showing the food prices in Amoy—Continued.

Articles.	Prices.	Remarks.
Vegetables—Continued.		
Potatoes.....per pound..	$0.01⅛	
Pumpkins.....do...	.01	One variety is perfectly solid, like an eggplant.
Rice.....do...	.02	
Sweet potatoes.....do...	.00½	The sweet potato flourishes in this climate and grows very large. It is not so delicate as the United States variety, but is less subject to mold and fungoid growths.
Summer squash.....do...	.01	
Squash.....do...	.00½	
Tomatoes.....do...	.04	Are small, insipid, and watery.
Tree mushrooms.....do...	.30	
Turnips—		
Young.....do...	.00½	
Old.....do...	.00¾	
Yams—		
Young.....do...	.01	The yam is the great staple and is frequently over 2 feet in length. Natives claim for it medicinal virtues.
Old.....do...	.00¾	
Vegetable products:		
Bean flour.....do...	.03	
Bean gluten.....do...	.10	
Flour—		
American.....do...	.04	A recent introduction. It is already very popular, stands the climate better than any other flour, and promises to be the basis of a large commerce.
Pea.....do...	.10	
Rice.....do...	.05	
Sago.....do...	.07	
Seaweed gluten.....do...	.08	This comes in white sticks and is superior to gelatin for thickening soups. It is colorless, odorless, and tasteless, but very wholesome.
Sugar—		
Brown.....do...	.06	
White.....do...	.07	
Tapioca.....do...	.07	Is very popular with wealthy Chinese.
Vermicelli, native.....do...	.09	
Meats:		
Beef—		
Fresh.....do...	.06½	The Amoy beef is the best in the East.
Canned.....do...	.07	
Buffalo.....do...	.05	
Edible dog.....do...	.17	Is not largely used. The practice comes from Canton, where it has been a fad for centuries.
Goat.....do...	.17	
Kid.....do...	.30	Considered a great delicacy, as the animal is carefully attended, being fed on green grass, fresh vegetables, and rice raw and cooked.
Lamb.....do...	.25	
Mutton.....do...	.20	The best comes from Shanghai and costs more.
Pork—		
Fresh.....do...	.11	The staple meat of China. It is flabby, loose fibered, and coarse in flavor.
Canned.....do...	.10	
Rat.....each..	.06	Used for medicinal purposes, to make the hair grow. Women are the chief consumers of rats.
Veal.....per pound..	.12	
Poultry:		
Chicken.....do...	.15	A popular variety is the so-called Japanese. It is small, swan white, and bears a strong resemblance to the fantail pigeon.
Duck.....do...	.07	
Goose.....do...	.06	
Turkey.....each..	$4.00 to 5.00	Turkeys are very hard to raise in this climate and bring from $1 to $5 each, according to size.

Table showing the food prices in Amoy—Continued.

Articles.	Prices.	Remarks.
Poultry—Continued.		
Eggs—		
Hen ..... each..	$0.01	
Duck ..... do...	.01½	
Goose ..... do...	.03	
Turkey ..... do...	.20	Used almost exclusively for hatching purposes.
Game:		
Quail ..... do...	.10	Larger and finer than in the United States.
Rice birds ..... per dozen..	.05	Not the rice bird of the U ited States. The one here is a finch about the size of an English sparrow; in poor seasons the size of a humming bird.
Curlew ..... each..	.20	
Snipe ..... do...	.10	
Grouse ..... do...	.50	
Partridges—		
Amoy ..... do...	.25	The best game birds of China.
Shanghai ..... do...	.50	Come from the Yang-tse district and are named after Shanghai, as that city is the market place of that portion of the Empire.
Pheasant ..... do...	.50	
Plover ..... do...	.15	
Fish:		
Whitebait ..... per pound..	.08	Are equal to the famous English variety.
Sea bass ..... do...	.12	
Flounders ..... do...	.10	Includes a large number of flat fishes, all of which are good.
Samli ..... do...	.11	The best fish in China is the Asiatic equivalent of the Atlantic shad.
Eels—		
White ..... do...	.05	
Silver ..... do...	.08	
Black ..... do...	.60	The black eel is popular with wealthy Chinese.
Rock cod ..... do...	.07	
Large silverfish ..... do...	.04	
Halibut ..... do...	.04	
Dolphin ..... do...	.04	Flesh coarse, oily, and fishy.
Porpoise ..... do...	.03	
Shark ..... do...	.02	
Shark fins ..... do...	.50	When properly cooked are a delicacy, being nutritious, digestible, and possessing a very delicate flavor of the ocean.
Bombay duck ..... do...	.10	Bombay duck is the name of a small fish of the herring family that is cleaned, boned, and dried until it resembles a Saratoga chip. It is served with curry.
Dried flat fish ..... do...	.30	
Dried herrings ..... do...	.06	
Shellfish:		
Clams ..... do...	.04	Out of the shell; very small, scarcely larger than beans.
Oysters ..... do...	.05	
Shrimps ..... do...	.06	Very fine; equal to those of California, Florida, and Texas.
Prawns ..... do...	.10	
Crabs ..... do...	.06	
Bamboo oysters ..... do...	.02	Are cultivated upon bamboo driven into the beds of shallow waters, especially where there are alternations of fresh and salt water.
Crawfish ..... do...	.06	
Dried shrimps ..... do...	.12	
Sundries:		
Butter, Danish ..... do...	.38	The American butter is better, but much dearer; therefore rarely imported. On account of climate, it must be sent in sealed tins.
Coal—		
Japanese ..... per ton..	6.75	
Formosa ..... do...	6.35	
Australian ..... do...	11.25	

Table showing the food prices in Amoy—Continued.

Articles.	Prices.	Remarks.
Sundries—Continued.		
Cream.....per quart..	$0.70	
Fruit marmelades..per pound..	.16	
Kerosene—		
American.....per gallon..	.42	American kerosene is not affected by Russian competition. Its superior quality commands from 30 to 50 cents a case more than the Russian kerosene. Recent improvements in Russian refineries may change this within the next 2 years.
Russian.....do...	.37	
Milk.....per quart..	.07	
Oil—		
Bean .....per pound..	.05	
Peanut.....do...	.07	When clarified has a pleasant taste and odor. It is used by the natives as olive oil is by the Spaniards.
Olive.....per quart..	1.50	
Salt.....per pound..	.01	A Government monopoly.
Se-yu—		
First quality.....per pint..	.20	A Chinese sauce prepared from soya beans by fermentation.
Second quality .....do...	.06	
Wood, for fuel.....per cwt..	.25	

DAILY FARE.

The daily fare is chiefly rice, which is served at each of the three meals. About 1½ pounds is the daily average of a workingman. Cooking increases the bulk 100 per cent and the weight 50 per cent by absorption of water. Meat and fish are used as relishes with the rice. The latter is generally cooked alone and served in small bowls. The meat and fish are cut into very fine pieces and stewed with a little water, oil, salt, and some kind of spice or other condiment. Sometimes the rice is mixed with the meat or fish after cooking and before being served. Vegetables are almost invariably made into a soup similar to the *pot-au-feu* of the French peasant. Macaroni is a semiluxury, and is used not more than three times a week.

The daily fare of an Amoy workingman and its cost are about as follows:

	Cents.
1½ pounds of rice	3
1 ounce of meat, 1 ounce of fish, 2 ounces of shellfish	1
1 pound of cabbage or other vegetable	1
Fuel, salt, and oil	1
Total	6

In European houses the average wages to servants, porters, chair coolies, and the like are $5 to $6 a month, without board. They get their food, or "chow," from the cook, who boards them at $2 a month apiece and on that basis reaps a profit of 50 cents.

The almost vegetarian diet is due more to religious forces than to poverty or frugality. The real religion is Buddhism, which, though somewhat modified from the Singhalese type, exerts a profound influence upon the lives of the people. Many Buddhist sects in China, aggregating millions, are

vegetarians. Everyone believes in the sacredness of all animal life, many in the transmigration of souls from human to brute form, and *vice versa*. All believe that health and strength are best conserved by a diet in which flesh is a flavoring ingredient and vegetable tissue is the main factor. One thing is certain, the workingmen thrive upon it, and in endurance, muscularity, and physical well-being compare favorably with their colleagues in other lands.

WORKMEN'S HOUSES.

The Amoy workingman lives in a small house, which, if it be an independent building, is seldom more than 20 by 30 feet. It is usually one story high, though two-story houses are not uncommon. In many houses a false ceiling is run across half the bedroom, on which are stored the trunks, winter clothing, and other belongings of the family. The windows are small, high up, and nearly blocked up with wooden, iron, or stone bars. The floor is cement or wood. According to his income, the house is smaller or larger, as the case may be, and contains from two to six rooms. There are no gas, water, nor sewer conveniences. The garbage is given to the family pig or pigs, and the offal is carefully preserved in a urinarium until it amounts to enough to sell as a fertilizer to the farmers and kitchen gardeners. The unavoidable stench is nothing compared with the two or three cents the ordure will bring into the family purse. Rents range from 50 cents to $2.50 per month. They will average about $1.50 a month, or 5 cents a day. This means four or five rooms to the family and some male boarder, who is almost always a close relative.

The water for cooking, washing, and scrubbing is brought from a neighboring well and stored in great earthenware barrels. It is never used for drinking, tea being the universal beverage. The house is poorly ventilated, and the smoke and fumes from cooking flavor the place and stain the walls and ceilings gray, brown, and black. At nightfall the rooms are lighted by lamps made by filling a cup with oil, on which a cork wafer supports a wick. Sometimes a paper lantern, gay with red paint, is employed, in which a small Chinese candle burns. Of late years American and Russian kerosene have come somewhat into vogue, and may be found in two houses out of three in Amoy and its suburbs and in one out of ten in the outlying districts.

The cooking is done in tiny fire-clay furnaces similar to those used by plumbers twenty-five years ago. The fuel used includes coal, wood, dead branches, dried leaves, dead grass, and grass roots. All save coal and wood are gathered by women and children. In the autumn they denude the soil of every visible particle of vegetable growth to stock themselves for the winter and spring. The grass and weeds that spring up, therefore, come entirely from the seeds that have fallen and been covered with loose earth. The children are very industrious and will gather and take home 80 pounds of dead grass apiece in one day. It takes about 5 pounds a day to supply the heat needed in cooking.

CLOTHING.

The clothing of the workingman is very scanty. Stevedores, lightermen, and porters wear a short pair of cotton trousers from knee to waist and go barefooted and bareheaded. Nearly all other workingmen wear a blouse and short trousers. A few wear slippers and a very few shoes and stockings. The clothes are made from cotton cloth and are dyed dark or light blue, buff, and yellow. Two or three suits will last a year and cost about $1.75. The few slippers or shoes that are worn are made from straw, pigskin, and cloth and cost from 3 to 50 cents a pair. Storm coats are made from leaves and hemp cord and cost 25 to 50 cents apiece. Nearly all workingmen have one good suit for holiday occasions; it is of finer quality than his everyday clothes and costs from 75 cents to $1.50.

HABITS OF WORKMEN.

The workingman uses tobacco, but in moderation. It is extremely cheap, ranging in price from 10 cents per pound upwards. He smokes it in curious pipes or cigarettes. The pipes are long, slender bamboos, in which enough of the root is hollowed out to form a bowl, or a thick bamboo half filled with water, into which a thin bamboo the size of a lead pencil is set obliquely so that the smoke passes through the water before it reaches the user's lips. A third style of pipe is a complex metal box with tubes and compartments, where the smoke is likewise drawn through water. A pipe full is a mere pinch of fine-cut tobacco and gives two or three inhalations. An ounce of tobacco lasts a day. The cigarettes are made of two pieces of paper overlapping each other. When rolled the inner sheet is cylindrical and contains the weed, while the outer is conical and is used as the mouthpiece. In this manner every particle of the tobacco is consumed. The cost of the luxury is about 1 cent a day.

Strikes and lockouts are unknown events in Amoy. There are no large establishments and not enough accumulation of money to produce a distinction between capital and labor. The employer seldom has much more money than the employé and treats the latter more as a fellow than as a subordinate. They usually eat together, and, in general, behave very much as did English masters and apprentices in the days of mediæval guilds.

TRADE GUILDS.

The workingmen have had guilds for centuries. In their action these combine the features of the trades union and the mutual-benefit society. The rules are almost as strict as those of similar organizations in the United States. On one occasion I asked a painter who was at work upon a boat to paint a name upon the streak. He answered, "No can do; not my pidgin. Pidgin belong man make name." On another occasion a boatman who was doing nothing was requested to assist in repairing a rickshaw. He promptly refused, saying "no boat pidgin."

If a stevedore buy a sampan, or small boat, and enter the ferrying business, he is at first boycotted, then beaten with bamboos, and then, if he still persists, his sampan is broken to pieces or else stolen.

The members of a guild are bound to help one another in their work, to render material aid in case of sickness, accident, or death among their number, to keep up the regular tariff of fees, charges, and wages, and to prevent "rats" or "scabs" from coming into the business.

There are no coöperative associations nor open political organizations among the working people. Nearly all belong to one or more secret societies. Of these there are political organizations, like the Ko-loa-hui; semi-religious, like the White Lily or White Lotus; fanatical, like the Taoist and Moslem societies; and benevolent, like the Chinese Masonic lodges and chapters.

There are no headquarters, club rooms, club houses, or meeting halls as such. All societies, whether industrial or otherwise, meet in the churches or joss houses. They pay nothing for the privilege and can stay all night if they provide the necessary candles, lamps, or lanterns. The reason of this practice involves one of the very remarkable features of Chinese jurisprudence and civilization. All church property belongs to the people. The title to all real estate vests in the Throne, not absolutely in its own right, but as the legal head of the great family—the Chinese nation. Land is inalienable. It can not be bought or sold. It is leased on long leases for what may be called a nominal rent to the Government, and these leases can be bought, sold, mortgaged, and devised the same as real property. But, no matter how the conveyance is worded, the Government can always exercise the right of eminent domain and redeem the land by paying its original value, plus the actual value of the improvements made upon it. It is the Henry George system carried out to its uttermost.

CHURCHES AND CHURCH PROPERTY.

In regard to churches, a Chinese ecclesiastical organization can not hold even the title to a lease; it is hardly a trustee, having only the right of custody; it can not sue or be sued; it is obliged to allow the public to use the temple, church, outbuildings, and land the same as if it were "common land" in the common-law sense. Any single individual or number of individuals can hold receptions, dinner parties, picnics, and meetings upon the premises without fee or charge. Barbers, dentists, physicians, and story-tellers can enter the place and there ply their vocations. Peddlers, traveling cook shops, curio dealers, grocers, farmers, and other wandering tradesmen can make use of the church grounds to exhibit and sell their goods. Even gamblers are permitted to throw dice and tempt fortune in a small way in other games within the outer gates. Only actors are debarred from the universal privilege. They must give their street show beyond the walls. So peculiar is the policy of the people that many instances are on record where Mohammedan priests, Spanish Jesuits, Protestant missionaries, Taoist

bonzes, and Shinto monks have preached their respective doctrines within the inner gates and just beneath the great statue of Buddha, which stands overlooking the place. Imagine a Chinaman in our land trying to burn joss sticks in a synagogue, cathedral, tabernacle, or chapel! Even the personal property in a temple belongs to the people. If a man or woman wills anything to the church for benevolent or charitable purposes (such an act is extremely rare in the Empire), the devise or legacy goes to a trust of which the magistrates and other civil authorities are trustees, and of which not a single ecclesiastic is a member. The rule applies to the minutest details. For example, a mandarin or wealthy merchant takes a vacation, and, desiring quiet, ease, and a beautiful resting place, goes, with his family and servants, to some temple famous for its picturesque surroundings. He sends furniture enough for comfort, has his servants do the cooking or hires the priest for the purpose, receives and entertains his friends, and at the end of his holiday goes home, giving the furniture to the church as a token of gratitude or because it will cost more to transport it home than it is worth. The furniture thereupon becomes public property, of which that temple or its priest is the custodian. The next mandarin or merchant can come along and use it as long as he pleases to remain without incurring any charge or expense.

It is a little startling to an American mind at first. At Lam-pa-do temple, on my first visit, I found farmers' wives covering the stone floor of the inner yard and subtemples with beans, cabbage leaves, and other vegetables, in order to dry and preserve these edibles for the market. At the temple of the White Stag a laundryman was utilizing the well and the granite fences for his business. At the temple in Ku-lang-soo one evening the sanctum had been converted into a bedroom, with bunks for a dozen people.

The social status of church and priest is well illustrated by a recent proclamation of the taotai and admiral of Amoy, who are the highest civil and military authorities of the district:

TWENTY-FIFTH DAY OF EIGHTH MOON (September 27, 1891).

Whereas the provincial examinations have just been held, and large numbers of scholars are returning to their native places; and

Whereas Amoy is a seaport open to foreign trade, where persons from all parts of the world live together. It is very easy for bad characters to appear and then disappear again; therefore, precautions must be taken with the greatest strictness and thoroughness. Moreover, the winter season is fast approaching. Information has, besides, been received of the arrival lately of wicked men and distributors of seditious placards from other places who are now in hiding here. For these reasons it is the more necessary to make an immediate inquiry in order to prevent the occurrence of trouble.

I myself, in company with Chin, the commander of the central corps of maritime forces, and the deputy magistrates of Shih-Hsün and the captains of the various defensive stations, must make a personal examination and instruct the five sergeants of police, the head constables, the regular constables, the bailiffs of the eighteen wards, the water bailiffs, and the water police to give their assistance to the military forces, to go to and fro, each in his own district, both night and day, in order to search out and arrest suspicious characters. It is also my duty to issue a proclamation.

Therefore, be it known to all keepers of monasteries, temples, Buddhist or Taoist temples, both large and small, on the hills, brothels, gamesters, innkeepers, opium shopkeepers, and others in Amoy that, from the time of issuing this proclamation, they are not allowed to give lodging to persons of whose proceedings there is any doubt, or bad characters from other places, or wandering prostitutes, or bands of street players. All inns, large and small, must keep a pair of books, registers to be used in turn, in which the name, surname, and proper place of abode of every guest is to be clearly stated, and the number going and coming. The register for each day must on that day, after the sounding of the first watch, be sent to my *yamên* for me to strike out any objectionable names; and this duty is no longer to be regarded as an empty formality.

Anyone venturing to disregard this regulation or to treat it as of little importance will assuredly be at once arrested and severely punished. My orders being given must be obeyed, on pain of incurring the terrors of the law. Tremble and obey.

EDUCATION.

Intellectually the Amoy working people are in a condition of retarded development. They do things as did their ancestors and resist any and all innovations. The common belief in the United States that all Chinese read and write and are well informed does not contain one particle of truth. The higher classes, who do not exceed 5 per cent of the population, receive what might be called a good literary education. Throwing out 5 per cent for those who have been brought under European influence or receive a quasi training as servants, clerks, and soldiers under the personal supervision of mandarins and merchants, the remaining 90 per cent are familiar with from one hundred to five hundred ideograms. They can keep accounts in a schoolboy manner, and at that point their mental horizons end. They seldom try to read, but rely for literary amusement upon itinerant readers and story-tellers.

As for the Chinese language, there is no such thing. Every province has its own language and every district its dialect. The native so-called written language is not a language, but an ideographic system, and is one of the greatest marvels of human genius. It could be applied with almost as much facility to English, French, and German as it is to the numberless languages of China, Korea, and Japan.

With such mental environments, superstition is a necessary fact. The workingman of Amoy, no matter what his nominal faith, has a profound belief in omens, evil spirits, good spirits, amulets, talismans, and horoscopes. When converted to the Islam, Roman, Byzantine, or Protestant religions he merely adds the primary ideas of their doctrines to those already learned. Thus, no matter whether he "chin-chin Joss," adores the Virgin, worships the prophet, or celebrates Christmas, he sets off firecrackers, burns joss sticks or incense, lights lanterns, beats gongs, cymbals, and tom-toms, ignites gilt and silver paper, and puts artificial flowers on his mantelpiece.

FORTUNE-TELLERS.

Clairvoyants and fortune-tellers in China are as numberless as the famous leaves of Vallambrosa. Even the seventh son is not unknown. Of the fraternity in question nearly all are priests and monks, who add these trades to

their regular profession in order to increase their incomes. On account the education of the hierarchy and their living together in the joss houses ai convents, the more expert can teach the others all the details of the scienc The professor of the black art in China is much more skillful than his cc league in the United States. For example, they make use of that curio principle in acoustics which causes an object to emit a musical sound out sympathy with that given by another body possessing the same natural not In the joss room there will be a handsome bronze gong supported by thr or four wooden pillars. When a searcher after truth is interviewing a prie in another part of the room, the gong will give out its melodious sour either in answer to a question or else to accent some exhortation or advic

The trick has deceived many unfamiliar with science, who never dreame that the dry wooden bar extended, it might be, 100 feet to another pa of the temple, and would carry the sound wave from the latter place and s set the gong in motion. The same principle is applied to musical statue ancient relics, and what the unregenerated European calls "potted a cestors."

The commonest kind of fortune-telling is found in every joss hous Upon the altar table is a cylindrical vase about 3 inches in diameter and 1 inches high, half filled with long, flat bamboo sticks 1 foot in length. Tl number varies from sixty to one hundred and fifty. Each stick is inscribe with a sentence and a number. The worshipper stands before the alta bows, takes the "luck vase," bows or kneels three times, and then shakes tl box with a sliding motion until one of the sticks separates itself from tl rest and comes forward and upward until it hangs over the edge of the bo The stick is then taken to a priest, who reads the number from a well-wo book or, what is more common, gives a slip of paper on which is lith graphed a short statement of good or evil things that are to come to tl applicant. According to the extent to which the desires of the latter a gratified he rewards the priest. Sometimes it is half a cent and sometim a dime. The "fortunes" are written in the literary Chinese language, ar are much more poetic than clear and accurate. I have at the consula over twenty that were obtained in as many joss houses, and all are alike predicting 90 per cent of happiness and 10 per cent of sorrow. The fc lowing is a sample fortune card:

Sails on the ocean bring wealth and joy to him who merits, but pain and ill tidings to t unconscientious. A dark cloud makes the fertile field seem barren, but the sunlight after time drives it away. The thought in thy mind shall blossom in silver and diamonds, unl during thy sleep it is stolen by thy foe. Under the trees thou shalt find repose and rest, l the fruit must be tended day and night. Sickness is of a day and a night and, rightfu regarded, should bring wisdom and right living to the afflicted.

These at half a cent a page are certainly cheap platitudes. They a popular, however, and are bought by so many people and so often that th keep the priests and monks from starvation, for formal religion in China on its deathbed. Not one church in a hundred can boast of accommod tions for its ministers that are much better than a pigpen. Ruined wal

broken roofs, dirt, and decay are everywhere. The real religion of the Chinese is ancestor-worship, and a hybrid spiritualism is believed in by the masses, who have learned that they can conduct every exercise as satisfactorily as a professional. The higher classes are almost entirely agnostics.

Here and there are found fortune-tellers and clairvoyants of great fame. They are usually priests of great intellectual ability, who have studied physiognomy, mind-reading, muscle-reading, and hypnotism, and have evolved some ingenious system of their own. The best I have met is the senior priest of the temple of the White Stag. He is well advanced in years, but as shrewd, active, and perceptive as a young man. He is a pleasant companion and abounds with wit and anecdote. His manner of procedure is as follows: He dons a dark robe, assumes a gloomy expression, and fairly glares at his patient; each question is put in his most dignified voice, and so phrased as to contain answers to a series of questions; as he speaks his eyes never leave the eyes of his questioner, and during the interview his hand touches the latter's hand or pulse. His mind-reading is as good as that displayed by Brown or Bishop, and to the credulous coolies who flock to his shrine seems a miracle. He changes his style from one moment to another, and so adds the charm of good acting to his work. It is needless to add that he is the richest priest in Amoy. On some days he has more than a hundred paying visitors.

GRAVE-TELLING.

The queerest industry in the ghostly line is "grave-telling." When the average Mongolian reaches manhood's estate, one of his first ambitions is to have a nice and comfortable grave. The moment he has the requisite cash he consults one or more "grave-tellers." These are old scholars, whose scholarship has not been appreciated by the public at large or who have fallen from grace by gambling, opium-smoking, or other vices, and who earn a precarious living from astrology, geomancy, clairvoyance, etc. The philosopher, after receiving a fee whose amount is proportional to the wealth of his client, consults his mystic books, draws an incomprehensible diagram with points and straight lines, and announces the day on which it will be *fung-suey* (good luck) to visit certain cemeteries and burial sites. On the day fixed the parties are all on hand, no matter what tricks the weather may play. I have seen them in a rocky pass where the thermometer was 120° and in a marsh knee-deep in mud when the rain was like a deluge. They appear on these occasions dressed in their best clothes and newly washed and shaved. The grave-tellers are equipped with books, diagrams, paper, and a forked rod, strangely resembling the divining rod with which our ancestors sought springs and veins of ore. The search begins with prayer and then comes a weary walk and talk, sometimes lasting hours. The site is finally picked out. Often two or three sites are selected, so, in case the use of one is prevented by unforeseen circumstances, another will be ready. The client arranges with the owner of the land and the authorities and is then prepared to die in peace.

The practice is universal and as old as Chinese civilization. Its influence upon the people is remarkable and may be inferred from the use of the term *fung-suey;* it means literally wind-water, and originally meant that a grave was wind and water tight. It was next applied to the owner and prospective occupant of the tomb.

He had a good *fung-suey, i. e.,* he was a happy and fortune-favored person. Its use was extended to families, dynasties, houses, and temples, so that it came in time to include the ideas of wealth, prosperity, power, duration, beauty, picturesqueness, and magnificence. It is the largest word in the Chinese language and is a shibboleth at times more terrible than any phrase in the history of the race.

MORAL CONDITION.

Drunkenness.—From an ethical standpoint the laboring classes of Amoy are entitled to great credit. Although they use alcoholic stimulants freely, they never indulge to excess and never get intoxicated. No native patients suffering from delirium tremens, alcoholism, or diseases complicated by hard drinking are ever found in the hospitals. Three local magistrates, when questioned, said that they had never had a defendant before them for inebriety. This sobriety is made all the more conspicuous by contrast with Europeans in the East, of whom nine-tenths drink heavily and a majority drink to excess. In the hospitals two-thirds of the European deaths from liver, heart, kidney, and enteric disorders are of patients who have used stimulants immoderately. In consequence of a merely nominal tariff, liquors are cheaper in China than in Europe or America, the drawback system enabling the merchant to sell Holland gin or Kentucky Bourbon for less in Hongkong than in Amsterdam or New York. A quart bottle of the former can be purchased for 27 cents, an ordinary quart bottle of fine Scotch whisky for 35 cents, and the same quantity of vermouth for 30 cents. With such an example set and such opportunities offered, it is wonderful that drunkenness is unknown among the Chinese workingmen.

Opium habit.—The opium habit is very general. Notwithstanding its expense, it prevails among the poor as well as the rich. It is difficult to determine the extent. In Amoy there are about two hundred public "joints," a small number in consideration of the large population and the number of visitors from other ports and parts of the province. The vice is practiced largely in private life, nearly every house having one or more "lay-outs." A vague idea of the subject may be gathered from the Chinese customs returns. In the year 1890 there was imported into Amoy 5,784.52 standard piculs of opium (the standard picul being 133⅓ pounds), or 771,269.33 pounds avoirdupois, or nearly 380 tons. That this was a smaller quantity than usual, owing to stock held over from previous years, is shown by the customs returns for several years.

Table showing the customs returns of opium of Amoy from 1870 to 1891, inclusive.

Years.	Amount.	Years.	Amount.
	Piculs.		*Piculs.*
1870	3,098.41	1885	9,609.91
1875	3,871.45	1886	7,768.17
1880	5,756.93	1887	6,362.88
1881	8,176.67	1888	6,872.93
1882	8,761.68	1889	5,885.43
1883	8,556.09	1891	5,784.52
1884	9,896.32		

The decrease since 1884 does not represent a diminution of the vice, but the results of the cultivation of the poppy by the Chinese. This was started on a large scale in the early eighties, but through inexperience on the part of the planters did not affect the market until 1885. Since then the native output has increased rapidly from year to year. In many districts in northern, western, and central China it has driven the imported article out of the market. In eastern and southern China it is reducing importation, as disclosed by the table quoted above. Prominent merchants in Amoy predict that, under the present system of protection pursued by the Chinese Government toward the fatal drug, it is only a question of ten or twelve years before the opium-importing business will be entirely abolished. For smoking purposes the crude gum is boiled with a small percentage of *yen-shi*, or the sublimate which is deposited in the interior of an opium pipe from the smoke. The finest smoking opium is made by two wealthy Canton manufacturers, named Lei-Yun and Fook-Loung. They use Malva opium, the best in the market. Their smoking paste sells at $1 (Chinese), or 75 cents, for 1 tael and 2½ candareens of the stuff. The quantity is measured by the dollar, a dollar's worth being the unit with all kinds and brands. A tael is 1⅓ ounces and a candareen one one-hundredth of a tael. The second quality is made from fine Persian opium, and is sold at $1 (Chinese) for 1 tael 5 candareens. The third is made from white, or inferior, Persian, and is sold at $1 (Chinese) for 1 tael 6 candareens. The fourth is made from native opium produced in Yun-nan and Tonquin. It is known as *Yun-nan-bak*, and comes to the market in two grades, which sell at $1 (Chinese) for 1 tael 6 candareens and 1 tael 8 candareens. The fifth quality is made from old or diseased crude opium of all sorts and sells at $1 (Chinese) for 2 taels. The sixth and worst is known as *ye-gung-yin*, and is made from anything containing morphine or codeine, and sells at $1 (Chinese) for 2 taels 50 cardareens, and even 3 taels. The well-to-do classes use the first four kinds; the working classes the last two, and especially the last. The opium business is in the hands of Europeans, chiefly British. It is very profitable *per se*, but is made more than doubly so by exchanging or bartering opium at sellers' prices for tea, sugar, camphor, bean cake, and other products of the buyers. In the past decade (1880–'90) the opium evil has been increased and intensified by the morphine habit. It was introduced by a

talented English physician, who cured (?) the opium habit with pills of sulphate of morphine. The unfortunate Chinese patients, not understanding the substitution of a more terrible vice for the one of which they desired to be cured, spread the praise of the new remedy throughout the district and thence to the province. The "little pills," or "little Hongkong pills," as they are called by the natives, are now sold by hundreds of thousands. They contain an eighth of a grain of the alkaloid and are manufactured in England. This enterprising proprietor has realized a handsome fortune from his novel but wicked trade. Rev. J. A. Otte, M. D., one of the most successful medical missionaries we have in the East, reports to me that he has encountered the victims of these morphine pills in every town of Fo-Kien, and that they have ruined more than 10,000 citizens heretofore prosperous in their callings.

Gambling.—The Chinese laborer loves the excitement of gambling and begins the recreation in mere childhood. Cake-peddlers and street hucksters carry dice and a bowl and at every opportunity start raffles, in which the entry fee is 1 cash (about one-twelfth of a cent). On every street in the daytime and early evening may be seen groups of children and boys around a peddler gambling for a cake, a fruit, or for a small amount of money. As they grow older they take to dominoes and develop a quickness of play and sight that borders on the marvelous. At manhood they patronize the houses where are played *fan-tan, pak-a-peo, chī-wah,* and other Oriental games of chance. They also combine into clubs of ten, twenty, or fifty and buy fractional tickets in the Manila lottery. Although gambling is a crime in China and gamblers classed and treated as habitual criminals, the law is almost a dead letter. It enables policemen and officials to "squeeze" the proprietors of the gaming tables, which they do to the extent of about 75 per cent of all profits. On holidays the law is repealed *pro tempore* and the professional is permitted to ply his vocation in the open streets and even in the yards attached to the churches, courts, and official buildings.

Offenses against the person.—In respect to offenses against the person, the Chinese workingman of Amoy is pleasant, peaceful, and patient to the last degree. When he loses his temper, he vents his feelings in a torrent of vituperation, tears, yells, and gesticulations. Rarely does he come to blows, and then it takes the form of a few scratches and pullings of the queue. The brawls and fisticuffs so common to the Anglo-Saxon race on both sides of the Atlantic are unknown in this province.

Sexual morality.—The sexual morality of the Amoy workingman is very high. Illegitimacy occurs but seldom. The magistrates here report it to be about 1 in 1,000 births, a lower percentage than in the great European communities. It may be questioned if the credit belongs altogether to personal character. The iron restraints put upon women; the still existing *patria potestas,* which enables a man to inflict almost any punishment he pleases upon wife and daughter; the influence of polygamy, which gives a man of strong passions unlimited wives and concubines, and the profound

power of the Chinese family system are factors which have as much to do with the general result as personal purity itself. Prostitution exists, of course, but it is on a small scale compared to that in the great cities of Europe and America. Concubinage, a very salient fact in Chinese sociology, belongs to the middle and higher classes rather than to the working people. The girls are recruited in infancy and childhood from the latter, but begin their life's career in the employ or ownership of the former.

Honesty.—As to honesty, the Amoy workingman is no better or worse than humanity in other parts of the world. He pilfers and is a sneak thief rather than a burglar or highwayman. He will snatch an umbrella from a woman in the twilight or take a bundle from a little boy. If he is a servant, he is apt to levy a tax on cigars, cigarettes, spare cash, and postage stamps.

EDWARD BEDLOE,
Consul.

UNITED STATES CONSULATE,
Amoy, November 4, 1891.

CHANGES IN THE CUSTOMS TARIFF OF ITALY.

REPORT BY SECRETARY OF LEGATION WHITEHOUSE, OF ROME.

I have the honor to inclose herewith a translation of a modification of the customs tariff of Italy, which went into force the day following its publication in the official gazette of the Kingdom, or on the 24th instant.

The new regulations will, it is estimated, benefit the treasury about 18,000,000 lire annually.

The following table will show those American products most affected by the increased duties:

Articles.	Imported in 1890.	Increase of duty.	Amount of increase.
	Quintals.	*Lire.*	*Lire.*
Cotton-seed oil	23,516	5	117,580
Fixed oils (not named)	156	5	780
Petroleum	471,993	1	471,993
Heavy oils	34,211	1	34,211
Coffee	1,776	5	8,880
Pepper	266	20	5,320
Total			638,764

It is a curious fact that, in so far as it applies to internal revenue, the new regulation is almost identically the same as that on the introduction of which Signor Crispi's ministry was defeated.

H. REMSEN WHITEHOUSE,
Secretary of Legation.

UNITED STATES LEGATION,
Rome, November 25, 1891.

TARIFF CHANGES.

[Inclosure in Mr. Whitehouse's report.—Translation.]

ARTICLE 1. To the general tariff of customs and to the internal tax on manufacture are introduced the modifications indicated in the following table, signed by our order by the minister secretary of state for finance.

ART. 2. The tariff of the tare (gross weight) for packages containing sugar, coffee, and extract of meat is substituted by the following:

	Kilograms.
For sugars:	
Simple sacks	1
Double sacks	1.5
Baskets of Indian matting	4
For coffees:	
Simple sacks	1
Double sacks	1.5
Bale	4
For extract of meat:	
Barrels and cases containing extract of meat in vases	60
Barrels and cases containing extract of meat in boxes or tin cans	30

ART. 3. The discretion of the customs section of Sampierdarena, regarding the taking out of bond of sugars, is limited to sugars coming exclusively from the land frontiers in sealed cars with direct destination for the sugar refineries.

ART. 4. The restitution of the tax of products containing sugar destined for exportation will be continued in the same proportion as at present.

ART. 5. The present decree will have force on the day following its publication in the official gazette of the Kingdom, and will be presented to Parliament to be made a law.

We order that the present decree, bearing the seal of state shall be inserted in the collection of laws and decrees of the Kingdom of Italy, ordering all concerned to observe it and to enforce it.

Given in Palermo this 22d of November, 1891.

BOHEMIAN INDUSTRIAL EXHIBITION.

REPORT BY CONSUL RUBLEE, OF PRAGUE.

The Bohemian Industrial Exhibition of 1891, also called a jubilee exhibition from the fact that it commemorated the centennial anniversary of the first industrial exhibition ever held in Europe, the location of which was also Prague, closed its doors on the 18th day of October after a prosperous existence of five months' duration.

Archduke Charles Louis, brother of the Austrian Emperor, formally opened the exhibition May 15 in the presence of a distinguished gathering of dignitaries, members of the Bohemian nobility, and representative citizens generally. The Emperor also took occasion to visit Prague in September for the special purpose of viewing the exhibition.

From its inception to the last day the undertaking was a signal success, especially from the standpoint of attendance. No less than 2,500,000 persons were recorded as having entered on paid admissions, while the considerable number of those having free entrance is not included in this count.

The large total is all the more remarkable, inasmuch as the visitors to be depended on could not include many strangers, and the Bohemian people—a nation of little more than 3,000,000 all told—made up probably an extremely large percentage of the total.

The figures of the attendance speak well for the attractions of the exhibition, and justly so. Intended to expose the varied industrial interests, natural resources, and wealth of the Kingdom of Bohemia, as well as its progressive movement in the arts and sciences, the picture that it presented was a very complete one and its power to interest considerable.

The natural beauty of the site, a portion of the city park being given up to the purpose, was such as to facilitate the rendering of the outward appearance attractive, and this effect was most successfully accomplished. Not only was the eye pleased by the artistic taste displayed in the arrangement of the buildings and the laying out of the grounds, but the stately and spacious main buildings and the ampleness of the grounds at once conveyed an impression of the substantiality and magnitude of the enterprise. Exclusively Bohemian, no products from other countries being admitted, it was all the more surprising to find everything on so large a scale. Beautiful to look upon, interesting to examine, and creditable to the Bohemian nation are words of comment that are not amiss.

Owing to political differences, the German element of the population—a very important factor in the industrial world of Bohemia—withdrew from all participation, with a few notable exceptions. The exhibition assumed in consequence somewhat of a national character, and some ill feeling was manifested on both sides, the most striking evidence of it being the complete ingoring of the exhibition by the German press of Prague. On the other hand, the Government took particular pains to afford every recognition to it, and the Emperor's visit was made the occasion of a great popular celebration. The Emperor inspected every department, spending several hours in this way on three different days, and congratulated the management warmly on the high measure of excellence attained.

While, as a whole, the exhibition was especially admirable, affording an insight into the diversified attainments of the Bohemian people in the most comprehensive manner, there were many of the departments that stood forth as points of salient interest. The large main hall, an iron structure of imposing architectural design covering a space of 12,000 square meters, was devoted to the multiplex exhibits of merchants' wares, and here were to be found the endless array of articles which make one exhibition so like all others. It was rather in other departments that the more interesting features were to be looked for.

The machinery hall, an iron structure covering 7,000 square meters, was a point of exceptional interest, and its contents forcibly indicated the importance of this branch of industry in Bohemia, which also takes a position of the highest importance in relation to the whole Empire of Austria-Hungary. According to statistics, the capital invested in this industry

amounts to 30,000,000 florins (about $12,000,000); and there are between 7,000 and 10,000 workmen employed, whose wages aggregate annually to between 4,000,000 and 5,000,000 florins (about $2,000,000). The machines exhibited comprised a great diversity and almost invariably were of a high order of workmanship, some of them, such as equipments for sugar factories and breweries, being in a measure specialties.

Another exhibit that called for more than passing inspection was that made by the beet-root sugar industry of Bohemia. This was contained in a separate building, in front of which rose an imitation sugar cane some 50 feet high, representing the daily consumption of sugar in Bohemia. The aim of the exhibit was to show, by means of models, the latest improvements and appliances in the sugar-making process, as well as to expose samples of sugar of all kinds, both raw and refined, while the raw materials used in the manufacture were likewise shown. A collection of sketches and plans, supplemented by documents, illustrated the development of the industry. The fact that there are in Bohemia one hundred and thirty-four beet-root sugar factories, employing 50,000 hands, gives an idea of the importance of the industry, which was well reflected in the exhibit made.

The department of schools was one that contained much worthy of attention. A review of the entire school system was presented, and the work of schools of all kinds and grades was on exhibition. The specimens of scholars' work from the schools for artisans were particularly instructive, as showing the attention bestowed upon the training of skilled labor.

Several wealthy landed proprietors of Bohemia erected pavilions, in which were displayed the products of their estates; and the glimpse thus afforded into the magnitude of these estates was somewhat in the nature of a revelation to a stranger. In Prince Schwarzenberg's pavilion, for instance, were included not only almost every kind of agricultural product, but alongside of these were exhibits indicating the varied character of his interests—factories, forestries, mines, fisheries, game preserves, etc.

Many other departments might be dwelt upon, such as the agricultural department, the department of patents, the pavilion of the city of Prague, the art gallery, the archæological collection, etc.; and in the long list none would be found wanting in interest. Besides the permanent exhibits, various live-stock, agricultural, and horticultural shows were held from week to week and were uniformly of a high order of merit.

The wide range of exhibits, combined with the care bestowed upon each one, produced the most satisfactory results and made the exhibition so successful as a whole.

A feature mention of which is not to be omitted was the *fontaine lumineuse*, which afforded a brilliant and attractive spectacle during the summer evenings. It was constructed on an elaborate scale and was worked by machinery from below. Many streams, both large and small, were thrown in almost endless combinations, while a multicolored radiance was imparted to the glistening water by means of a powerful electric light.

Excellent provision was made for the entertainment of the public, especially in the way of music, military bands giving fine concerts both afternoons and evenings. A series of balloon ascensions was successfully carried out by a firm of French aëronauts, their last trip taking them to the Baltic Sea, several hundred miles distant from Prague.

The financial outcome of the undertaking was very gratifying to the management. From the figures obtainable at this date, it appears that the total receipts were 1,590,000 florins, while the disbursements were 1,580,000 florins, leaving a balance of 10,000 florins over and above all expenses. Of the receipts the admission money amounted to 720,000 florins, and the exhibition fund of 350,000 florins, a sum contributed before the opening by the provincial and city governments, as well as by individuals, is also included. A sum of 120,000 florins was netted from a lottery, and the balance came from the letting of various privileges. In the disbursements the principal item was 1,000,000 florins for buildings, the remaining outlay being for running expenses.

WILLIAM A. RUBLEE,
Consul.

UNITED STATES CONSULATE,
Prague, November 16, 1891.

NEW PATENT LAW OF GERMANY.

REPORT BY CONSUL-GENERAL EDWARDS, OF BERLIN.

I have the honor to inclose herewith a translation of a clipping from the Hanover Courier of the 3d instant concerning the provisions of the new patent law of Germany.

It will be seen that, among the important changes, the defendant is required under the new law to prove that the article which is the subject of the action for infringement was produced by some other process than the patented one. The prosecution in such cases is rendered much easier by this shifting of the burden of proof.

W. H. EDWARDS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, November 6, 1891.

THE NEW GERMAN PATENT LAW.

[Inclosure in Consul-General Edwards's report.—Translated from the Hanover Courier of November 3, 1891, evening edition.]

The new patent law which went into force on October 1 contains a number of provisions which differ very materially from the former requirements of law, and a knowledge of these new provisions is therefore of great importance both to producers and consumers of patented articles. While formerly the industrial use of products manufactured according to a patented process was not under patent protection, a paragraph added to section 4 of the new law

provides that the effect of the granting of a patent for a process extends also to articles produced directly by such process. Accordingly, a dyer who obtains and uses in Germany dyestuffs which are patented in Germany, but which are produced in Switzerland without the consent of the owner of the patent, makes himself liable for breach of patent. This point was doubtful under the old law. The prosecution for such breach of patent is rendered easier for the owner of the patent in so far as, in accordance with section 35 of the new law, he is relieved of the burden of proof that the patented article placed on the market is produced according to this patented process; in future in suits for infringement of patent the burden lies on the defendant to prove that the article in question was produced by another process than the patented one. The above provisions are still more sharpened by the fact that, according to the new structure of the law, not only those can be sued for damages who violate a patent knowingly, but also those who do so out of gross carelessness. All of these new provisions make it advisable that in interested industrial circles, and especially among small tradesmen, in future patented products should be handled with the greatest possible circumspection, with careful consideration of the new provisions of law, in order to protect themselves against the disadvantages arising from a breach of patent.

THE IMPERIAL MOSCOW TECHNICAL SCHOOL.

REPORT BY VICE-CONSUL WERTHEIM.

No programme of the plan and system of instruction now in actual practice in the Imperial Moscow Technical School exists in print, nor is any historical sketch of the institute available. The only printed records I could obtain are: (1) A circular giving the examinations for admission of candidates; (2) the programme for 1879, now altogether out of date, all the preparatory classes having been abolished; (3) an account of the working of the school from 1887 to 1889, embracing but a part of the programme of the present day.

The school is on the eve of another radical reform, and a new plan, now in course of elaboration, is expected to come into operation some time next year.

From a series of reports Mr. Ivan Aristoff, director of the school, had the goodness to lend me I have prepared the following extract:

The Moscow Foundling House, opened by Catherine II in 1763, extended very rapidly, and in the year 1826 the want of room was so seriously felt that the Empress Maria Feodorovna had to come to the rescue and remedy the existing evil by ordering the removal of all the workshops that had been set up within the edifices of the institution for the purpose of teaching a number of the boys various trades, such as shoemaking, tailoring, carpentering, brass founding, etc., so as to enable them to earn an honest living when they grew up to manhood.

She assigned the buildings of an old palace in the immediate vicinity of Moscow for these workshops and the accommodation of three hundred foundling boys. In 1832 arrangements were so far completed that ninety boys were admitted, and by the year 1836 the full complement of three hundred foundling boys were being housed and taught their various occu-

pations within the buildings now containing the Imperial Moscow Technical School; so that the present high-class institution is but an outgrowth of what was but a few years since merely an industrial school.

In connection with the workshops were rudimentary schools for the use of the boys, where reading, writing, religion, arithmetic, Russian history and geography, drawing, and caligraphy were taught, and also the first rules of algebra in the second or upper class.

Shoemaking and tailoring were very soon discontinued and the workshops more and more neglected, but the schools made rapid progress.

In 1838 physics, geometry, and chemistry were introduced, with a laboratory in 1841, and the art of dyeing and printing textiles was practiced. The school was to be entitled the "Technological Institute," or the "Technological Institute of the Foundling House," but neither of these titles was adopted.

In 1844 instruction in mathematics and mechanics obtained special attention. The institution had by this time been entirely divested of its original character, and but few of the old workshops were operated.

The development of industry in the country created an increased demand for well-trained mechanics, and the institution endeavored to meet this demand. Experience had taught that teaching the boys mere handicraft had, to a great extent, proved futile. A number of the lads, on leaving the institute, took to quite different pursuits. They abandoned the trades to which they had been trained and sought employment as postmen, shopmen, etc.

In 1846 the Emperor paid a visit to the institute and ordered the machine shops to be extended. The effect was that within two years a 25-horse-power engine was erected, a number of machine tools put up, and the whole formed a small but complete mechanical works. In order to make room for other pupils, the number of foundlings was reduced to one hundred and fifty, and fifty pupils were admitted at a fee of $35 per annum.

In 1854–'56 some Government orders for the artillery were satisfactorily executed.

In 1849 seven and one-half hours per day were devoted to practical work in the mechanical works and four hours to theoretical studies. The pupils completed the course of their studies at the age of 18 or 19, and then, for another two years, applied themselves exclusively to practical work in the shops.

In the year 1860 all handicraft was entirely abandoned, the institution then obtained its present title and was opened to public competition, and since that time has had no further connection with the Foundling House.

NICHOLAS WERTHEIM,
Vice-Consul.

UNITED STATES CONSULATE,
Moscow, September 28, 1891.

PROGRESS OF NEWCASTLE, NEW SOUTH WALES.

REPORT BY COMMERCIAL AGENT BAGGS.

I take great pleasure in transmitting the inclosed newspaper clipping relative to the progress of Newcastle. It is a comparative statement showing certain returns for this port during the quarter ended September 30 last, and demonstrates in a very clear manner the rapid progress this port is making. It is now the coal mart of the southern hemisphere, and is destined in a few years to be the manufacturing center of the same territory.

Should this northern district ever separate from the parent colony, as did Victoria in the south, and Newcastle become the capital, as it is already the metropolis, its progress will be simply phenomenal. It is the natural outlet for shipping the great bulk of the wool of the colony, as also its other productions; but, owing to the blighting effect of the centralizing influences of Sydney, much of this export is carried directly through Newcastle on to Sydney. Newcastle is, however, gradually achieving its proper position from sheer force of its own overwhelming importance.

GEORGE T. BAGGS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Newcastle, N. S. W., October 9, 1891.

PROGRESS OF NEWCASTLE.

[Inclosure in Commercial Agent Baggs's report.]

REVENUE RETURNS.

The return of revenue received at the port of Newcastle for the quarter ended September 30, as compared with the same period of 1890, shows an increase in favor of the quarter just ended of £14,557 6*s.* 3*d.* Following is the return for the months of July, August, and September of 1890 and 1891:

Description.	1890.			1891.		
	£	*s.*	*d.*	£	*s.*	*d.*
Rent of Queen's warehouse	10	10	5	0	14	8
Tonnage rates	1,613	5	7	2,315	5	10
Harbor and light rates	1,557	2	4	1,936	6	8
Duty	24,820	12	8	35,918	4	1
Pilotage	3,232	12	4	5,150	18	4
Harbor removal dues	463	10	0	933	10	0
Total	31,697	13	4	46,254	19	7

The return for the half year ended June 30, 1891, as compared with the first half of 1890, shows an increase of £12,433 8*s.* 7*d.* This, added to the £14,557 6*s.* 3*d.* increase in revenue for the quarter just ended, gives a total increase so far this year of £26,990 14*s.* 10*d.* on that of the same period of 1890.

EXPORT OF COAL.

The return showing the quantity and value of the coal exported from the port of Newcastle for the months of July, August, and September to foreign and intercolonial ports shows an increase of 221,649 tons, valued at £119,072, in favor of those three months of 1891 as compared with the corresponding period of 1890. Adding this to the increase of 225,813 tons on the half year ended June 30 of this year allows of a total increase of 447,462 tons so far this year as compared with the corresponding period of 1890. The return is as follows:

Whither exported.	1890.		1891.	
	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*	
Victoria	156,139	£81,557	203,124	£110,091
New Zealand	41,804	22,578	41,424	24,043
South Australia	37,753	19,469	65,128	31,694
Queensland	1,482	814	4,557	2,406
Tasmania	7,889	4,093	19,890	9,701
Western Australia	1,800	890	7,502	3,773
Hongkong	9,429	4,956	4,300	2,090
United States	41,582	22,868	130,575	71,249
Java	11,999	6,599	20,762	11,244
New Caledonia	1,371	1,208	6,953	3,667
Mauritius	.....	.....	3,141	1,727
Fiji	3,686	1,957	2,371	1,075
India	4,913	2,702	5,090	2,799
Philippine Islands	3,963	2,124	12,034	6,620
Peru	3,160	1,738	4,963	2,730
Chile	31,487	17,266	42,398	23,314
Sandwich Islands	1,117	614	.....	.....
Mexico	996	548	4,759	2,067
South Sea Islands	2,621	1,442	.....	.....
New Guinea	.....	.....	4,923	2,545
Singapore	5,300	2,815	8,436	4,385
Macassar	.....	.....	850	467
Siam	838	461	.....	.....
Renador	.....	.....	679	373
Guam	2,400	1,320	.....	.....
Great Britain (bunker coal)	1,000	1,125	519	156
Total	372,729	199,144	594,378	318,216

The export of coke for the quarter ended September 30 last amounted to 167 tons, valued at £215.

SHIPPING RETURNS.

The return of vessels, inclusive of coasters, which have arrived at, and sailed from, the port of Newcastle during the months of July, August, and September, 1891, compared with the same period of 1890, shows an increase for the quarter just ended of 264 more arrivals and 270 more departures. The figures are as follows:

Month.	Arrived.		Sailed.	
	1890.	1891.	1890.	1891.
July	394	385	391	358
August	332	400	333	397
September	159	364	137	376
Total	885	1,149	861	1,131

CUSTOMS-ENTERED VESSELS.

The return of vessels that have entered inwards at the Newcastle custom-house during the months of July, August, and September of this year shows an increase of 104 vessels as compared with the corresponding period of 1890. In tonnage the increase amounted to 118,729 tons. The clearances outward showed an increase in favor of the period under review of this year of 121 vessels having a net register of 118,729 tons. These do not embrace the coasting vessels. The return is as follows:

Month.	Entered.				Cleared.			
	1890.		1891.		1890.		1891.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
July	121	125,076	133	140,372	121	123,845	122	122,316
August	102	102,606	124	128,975	102	95,296	121	132,605
September	53	54,543	123	131,607	31	34,033	132	135,473
Total	276	282,225	380	400,954	254	253,174	375	390,394

The first half of the present year shows an increase in the arrivals of 70 vessels of a total net register of 89,476 tons as compared with the same time of 1890, while the clearances outwards give an increase of 94 vessels with a register of 138,905 tons. It will therefore be seen that from January up to September 30, 1891, 174 vessels more have arrived and 215 more sailed than did in the same time of 1890.

AUSTRALASIAN STATISTICS.

*TRANSMITTED BY COMMERCIAL AGENT BAGGS, OF NEWCASTLE, N. S. W.**

The Government statistician (Mr. T. A. Coghlan) has just issued, in the handy form of an octavo pamphlet, a highly interesting series of tables disclosing information of a valuable character respecting the Australasian colonies for the year 1890. The first division of the work relates to population, and begins with a table showing the number of inhabitants in each colony at the census of 1871, 1881, and 1891, with the annual rate of increase per cent for each period. It appears that the population of Australasia was 1,063,608 in 1871, 2,742,550 in 1881, and 3,816,418 in 1891; or, in other words, that it has very nearly doubled itself in the period in question. The female population has increased at a greater rate than have the males; they numbered 861,162 in 1871, 1,256,634 in 1881, and 1,766,355 in 1891, so that they have more than doubled their numbers. Of the males there were 1,063,608 in 1871, 1,485,916 in 1881, and 2,040,575 in 1891; they therefore fell short of twice the 1871 count by nearly 90,000. The average annual rate of progression for the whole of Australasia was 3.6 during the period from 1871 to 1881, but had slightly declined (to 3.36) during the last decade. It is worthy of note that, at the present rate of increase, the population of Australasia will double itself in a few months short of twenty-one years. Taking now the colonies separately, the census populations will be found as follows: New South Wales, 1,134,207; Victoria, 1,140,405; Queensland, 393,938; South Australia, including the northern territory, 324,536; Western Australia, 49,835; Tasmania, 146,667; and New Zealand, 626,830. It will be noticed that five of the colonies have increased at a greater rate during the last ten

* The commercial agent failed to mention the publication from which this interesting review was taken. The same holds good in regard to the "Timber Trade of New South Wales," which immediately follows.

years than they did in the previous decade. New South Wales has increased her ratio from 4.12 to 4.2, Victoria from 1.66 to 2.83, and Queensland from 5.92 to 6.32. Western Australia made the greatest jump of all—from 1.6 to 5.31—and Tasmania progressed from 1.29 to 2.4; South Australia, however, declined from 4.19 in the period from 1871 to 1881 to 1.49 in 1881 to 1891, and New Zealand also fell away from 6.69 to 2.5.

The second table shows very plainly how great is the room for expansion in Australasia. The total area of the colonies amounts to 3,161,470 square miles, and, taking the estimated population at the end of 1890 to be 3,693,341, there would be just six persons to every 5 square miles of territory. When it is remembered that, taking the whole world, there are over twenty-seven persons on an average to every square mile, that in Europe the average density is eighty-six persons to the square mile, and that even in the United States of America there are nearly nineteen persons to every square mile, Australians will feel that they need not be apprehensive of being too much crowded for some time to come. Victoria is by far the most densely populated of all these colonies, having nearly thirteen persons to the square mile, while New South Wales has less than four, and Western Australia is so sparsely peopled that she could spare 25 square miles to every man, woman, and child of her population.

In another table is shown the rate of increase exhibited by the population in each of the last ten years. In the first year of the decade the population increased at the rate of 3.69 per cent, and in the following year stood at 3.47 per cent; 1883, however, is the highest year of the series, the rate of increase being 4.79 per cent. From that period a slow but steady decline took place, the rate gradually falling to 2.56 in 1889 and 2.67 in 1890. It is evident that this result was brought about by the encouraging effect on immigration caused by the general prosperity of the earlier years of the series, while the decline has accompanied the depression that has prevailed more recently. New South Wales has followed the general average, having started with an increase of 4.56 in 1881, rising to 5.69 in 1883, and then steadily falling to 3.7 in 1890. Victoria, on the contrary, has increased her rate in the decade. She started with 1.91 in 1881, rising by slow degrees for the next few years, making a sudden jump to 5.26 in 1888, and ending in 1890 with 2.68. Queensland, like New South Wales, followed the general law; but South Australia, starting with an increase for 1881 at the rate of 6.9 per cent, dropped rapidly, and in two years (1886 and 1888) actually lost population, as also did Western Australia in the last-mentioned year, though increasing at the rate of 4.09 and 6.32 in the two following years.

Food for reflection may be found in the table which gives particulars of the arrivals and departures by sea for the Australasian colonies during the past five years. It will be found that the excess of immigrants over emigrants was 57,538 in 1886, but in the following year it had dropped to 52,386, while for the next three years the gain from this source was respectively 49,474, 40,457, and 39,784, another proof of how the decline in general prosperity affects the population. The most striking features of the table are the figures recorded for South Australia during the period. In 1886 that colony lost population by emigration to the number of 7,608; in 1887 the loss was 2,199; in 1888 it was 113, while in 1889 there was a gain of 514 immigrants and as many as 2,790 in 1890. New Zealand, on the contrary, has lost as the period progressed. In 1886 that colony gained by 1,064 persons and by 977 in 1887, while in 1888 she lost as many as 9,175, and, although there was in 1889 a small gain of 214, in 1890 the emigrants exceeded the immigrants by 1,782.

The number of births recorded in Australasia during 1890 was 126,965, of whom 64,594 were males and 62,371 females. The deaths during the same period numbered 50,442, of whom 29,439 were males and 21,003 females. The number of marriages during the year was 27,522.. New South Wales had the largest number of births—38,964; but Victoria had the highest record for both deaths and marriages—18,012 of the former and 9,187 of the latter. Looking at the figures in another light, it will be found that Queensland had the highest birth rate—39.66 to every 1,000 of the population; New South Wales came second, with a rate of 35.36 per 1,000, while the rate of Victoria was 33.67. As regards the death rate, Victoria stands highest, with 16.14 for every 1,000 persons, Tasmania being second with

14.8 and Queensland third with 14.51. New Zealand occupies the most favorable position in this respect, her death rate being only 9.57 persons per 1,000, that of New South Wales being 12.9, or nearly 13 persons out of every 1,000 of the population. It is rather remarkable how the marriage rate of Victoria has increased of late years. In 1881 there were less than 7 marriages to every 1,000 persons in the colony, but the rate has steadily advanced, until in 1889 it was 8.33 and in 1890 8.23 marriages per 1,000. The lowest marriage rate (6.07) was in New Zealand. In New South Wales it was 7.15, which is very slightly under the average for Australasia.

The estimated population of the capital cities of each of the colonies, including the suburbs, on December 31, 1890, is given as follows: Sydney, 380,040; Melbourne, 484,630; Brisbane, 91,955; Adelaide, 129,805; Perth, 8,447; Hobart, 33,136; Wellington, 33,220. The number of births in Sydney during the year was 13,529; in Melbourne it was 17,859. The number of deaths in Sydney during the same period was 5,591; the number in Melbourne was 9,207. It thus appears that, in spite of the much larger number of births in Melbourne, the gain in this respect was reduced through the larger number of deaths to only 714. The number of deaths of children is usually regarded as some indication of the healthiness of a city. If this be so, it will be found by the tables given that Wellington, with a proportion of 99.9 deaths of infants under 1 year to every 1,000 births, occupies the first place, while Adelaide and Sydney, with the respective proportions of 119.49 and 134.82, come next; Melbourne and Hobart, with 143.96 and 146.23, respectively, are the worst in this regard; Perth, with a proportion of 136.09, and Brisbane, with 135.64, being only a little higher than Sydney.

Financial matters are next treated of, and it will be found that the total revenue of Australasia in 1890 was £29,216,302. The largest amount from any one source was £9,302,594, derived from railways and tramways. Customs produced £8,434,863; public lands, £4,164,667; other taxation, which includes excise, £3,039,271; miscellaneous sources of revenue, £2,264,755; post and telegraphs, £2,010,152. The total revenue of New South Wales was £9,498,620; of Victoria, £8,519,159. New South Wales derived £1,888,321 of her income from customs; Victoria, from the same source, collected £2,658,010—a fact which seems to show that protective duties do not quite prevent importations. New South Wales raised £2,243,039 from public lands, but the smaller territory of Victoria only yielded £579,776 from this source. The railways and tramways in Victoria produced £3,134,066, as against £3,013,921 from the same services in New South Wales. As Victoria has 2,688 miles of Government railways in operation, while New South Wales has only 2,182, it looks as if the management in the mother colony was more successful than that of Victoria, for, while the capital expended on the Victoria lines is very slightly in excess of that expended in New South Wales, where there was an enormously expensive zigzag to construct, the net earnings of that colony amounted to £1,143,050 in 1890, while the Victoria earnings were only £999,708. In one respect, however, Victoria bears the palm. She carried on her railways in 1890 no less than 71,058,940 passengers, as against 19,037,760 in New South Wales. No doubt the excellent suburban service of Melbourne largely accounts for this enormous number of passengers; still, the fact remains that, compared with the population, scarcely any country in the world carries so many passengers by rail as Victoria.

But, returning to the public revenue, and looking at the question from another point of view—that is, what proportion is contributed per head of the population—it will be found that, although in most of the colonies direct taxation is unknown, no less than £3 1*s.* 4*d.* per head of the inhabitants of Australasia is derived from customs and other forms of taxation; services such as railways, tramways, post, and telegraphs provide at the rate of £3 6*d.* per head; public lands contribute at the rate of £1 2*s.* 3*d.* per head, and 12*s.* per head comes from miscellaneous sources of revenue; making a total of £7 16*s.* 1*d.*, on an average, paid to the public revenue in 1890 by each individual in Australasia. The taxation per head in Western Australia, £8 15*s.* 6*d.*, is the highest; that of Tasmania, £5 5*s.* 11*d.*, is the lowest; Victoria, with £7 12*s.* 8*d.*, is a little below the average; South Australia, with £7 18*s.*

9*d*., is a trifle above it. In New South Wales each inhabitant contributes £8 12*s*. 5*d*. and in Queensland £8 7*s*. 10*d*.

In another table is shown the amounts raised by each colony from customs and excise for the last ten years. In all cases the amounts have largely increased, showing that, in spite of the heavy duties imposed in most of the colonies, no diminution of foreign trade to any marked extent has taken place.

That the resources of Australasia have increased in fair proportion with the increase of population is proved by a table which gives the public revenue of each colony for ten years past. The total revenue of Australasia in 1881 was £20,618,816, but in 1890 it reached the sum of £29,216,302, an increase not very far short of 50 per cent during the decade.

The public expenditure of Australasia in 1890 was £30,729,823. Of this sum the largest amount, £9,645,737, was spent by Victoria, New South Wales coming second with £9,553,562. Out of the total Australian expenditure £6,645,012 was laid out on railways and tramways, £2,226,301 on post and telegraphs, £2,258,688 on public instruction, £12,150,150 on other services of various kinds, and £7,449,672, or nearly one-fourth of the total expenditure, for interest and charges on the public debt. New Zealand pays a higher proportion under this head than any of the other colonies. Out of a total expenditure of £4,081,566 she pays no less than £1,640,289, or 8*s*. in every £1 of her expenditure, as interest and charges on public debt. Taking the whole of Australasia, the sum which each individual pays on this account is £1 19*s*. 10*d*.; in Queensland, however, each person contributes £2 18*s*. 8*d*.; in South Australia the individual contribution is £2 17*s*. 10*d*. and in New Zealand £2 12*s*. 9*d*. The proportion per head in Victoria is less than in any of the colonies, £1 7*s*. 8*d*.; in New South Wales it is £1 14*s*. 5*d*.; in Western Australia, £1 10*s*. 5*d*.; and in Tasmania, £1 11*s*. 3*d*.

The average cost to each individual in Australasia for railways and tramways is £1 15*s*. 6*d*. Victoria, under this head, pays £2 5*s*.; New South Wales, £1 16*s*. 11*d*.; and the lowest is Tasmania, with 15*s*. 5*d*. Post and telegraphs cost each individual in Australasia 11*s*. 11*d*.; the contribution of New South Wales is 11*s*. 9*d*. and of Victoria 12*s*. 9*d*.; the lowest is New Zealand—8*s*. 3*d*. The cost of public instruction averages 12*s*. 1*d*. to each of the Australasian colonists. New South Wales pays the highest individual contribution—13*s*. 1*d*.; New Zealand, with 4*s*. 10*d*., is the lowest.

The loans expenditure of Australasia amounts to no less a sum than £178,872,629, of which only £20,033,876 were for works not reproductive. Railways and tramways absorbed £110,219,619; electric telegraphs, £3,324,978; water supply and sewerage, £14,787,020; roads and bridges, £6,514,998; harbors, rivers, lighthouses, docks, etc., £9,109,246; defense works, £1,891,680; other public works, £7,584,357; immigration, £5,406,855. New South Wales spent £32,571,007 on railways and tramways and Victoria £31,673,671. Water supply and sewerage cost New South Wales £4,574,848 and Victoria £6,565,404. On harbors, rivers, etc., New South Wales spent £2,884,376; Victoria, £587,834; Queensland, £1,822,197; South Australia, £1,357,068; and Tasmania, £1,506,333. New South Wales has the largest expenditure for defense works, £864,581; New Zealand comes next with £429,719. Public works generally cost New South Wales £1,184,448; Victoria, £1,919,319; and New Zealand, £2,132,955. The only colonies that have expended loan money on immigration are New South Wales, £569,930; Queensland, £2,691,775; and New Zealand, £2,145,150. The total loan expenditure of New South Wales was £47,607,770; Victoria, £40,965,972; Queensland, £25,843,970; South Australia, £19,885,649; Western Australia, £1,379,419; Tasmania, £6,190,692; and New Zealand, £37,359,157—a considerable proportion of which was the cost of the Maori wars. The loan expenditure of Australasia equals 5.77 times the revenue proper; that of New South Wales equals 5.01 times; of Victoria, 4.81 times; of Queensland, 7.82 times; of South Australia, 7.74 times; of Western Australia, 3.33 times; of Tasmania, 8.17 times; and of New Zealand, 6.41 times.

The public debt of Australasia at the end of 1890 amounted to £185,692,805, having increased from £93,762,589 in 1881. That of New South Wales at that date was £48,425,333, nearly three times what it was in 1881. The public debt of Tasmania at the end of last year was £6,432,800, also an increase of three times. Victoria, with a debt of £41,377,693; Queensland, with £28,105,684; South Australia, with £21,151,500; and Western Australia, with £1,367,445, had each about doubled their debt; and New Zealand, with a debt of £38,852,350, had increased since 1881 about 40 per cent. The total Australasian debt per head at the end of 1890 amounted to £40 3*d*., an advance of very nearly 50 per cent over the indebtedness of each colonist in 1881.

The liabilities of the Australasian banks of issue for the last quarter of 1890 amounted to £117,249,696 and their assets to £170,371,128. They had notes in circulation to the value of £5,373,316; bills, £450,443; balances due to other banks, £565,794; and deposits to the amount of £110,860,143. Against these liabilities they had £19,277,912 in gold, £987,396 in bullion, £5,398,051 in landed property, £634,491 in notes and bills, £3,189,077 in balances due from other banks, and £140,884,201 in notes and bills discounted, etc.

The savings banks of Australasia had 674,370 depositors, with no less than £16,879,286 to their credit—an average of £25 7*d*. per depositor, or £4 9*s*. 1*d*. per head of the population. The greatest number of depositors was in Victoria—288,240—whose united deposits amounted to £5,405,644; while New South Wales had only 143,826 depositors, with £4,730,469 to their credit. The Victorian depositors, however, only average £18 15*s*. 2*d*. per head, while those of New South Wales are equal to £32 17*s*. 10*d*. per head. Queensland stands even higher than New South Wales in this respect, for, though there are only 45,885 depositors in that colony, their united deposits amount to £1,666,855, or £36 6*s*. 6*d*. per individual. It would appear from these figures that in Victoria the savings banks are more largely availed of by the poorer classes, while in New South Wales, and especially in Queensland, the depositors are among those of a rather higher rank in life.

As regards internal communication, it will be observed that Australasia possessed 11,013 miles of Government railways at the end of 1890, upon which the sum of £107,597,382 has been expended, an average cost of £9,770 per mile. There were also 1,445 miles in addition under construction. The net earnings during the year came to £3,305,953, showing an average of 3.07 per cent upon the capital expended, notwithstanding an absolute loss of £16,855 upon the railways of Western Australia. The average rate of interest payable upon the capital expended on railways throughout the group was 4.01, so that, taking it all round, there is a balance of 0.94 per cent to be made up before the railways of Australasia are self-supporting. The largest deficiency is in the case of Western Australia, or 6.23 per cent. Queensland comes next with 3.32 per cent, and New South Wales and Victoria are behindhand to the extent of 0.29 and 0.92 per cent, respectively. South Australia is the only colony whose railways pay their interest and leave a small margin—1.1 per cent—to the good. The working expenses of the railways in Australasia in 1890 absorbed £6,019,012; 101,992,183 passengers and 12,503,862 tons of goods were carried, and 31,319,318 train miles were run. The revenue derived from this traffic was £9,325,364, of which £3,874,145 was contributed by passengers and £5,451,219 came from goods. The rolling stock of all the colonies includes 1,645 locomotives, 3,140 passenger carriages, and 35,574 goods wagons.

In postal and telegraphic matters Australia need not be ashamed to meet her enemies in the gate, with a total of 5,965 post-offices in 1890 and 182,418,373 letters, 25,619,596 books and packages, and 102,465,329 newspapers received and dispatched during the year, or an average of 49 letters, 7 packages, and 27 newspapers per head. It is worthy of notice that in Victoria, where the penny postage has recently been introduced throughout the colony, the number of letters received and dispatched has risen from 48,097,268 in 1889 to 62,526,448 in 1890, or at the rate of 56 per head in that year, as against 43 per head in the previous year. In New South Wales the number of letters was 157,707,900, or at the rate of 52 per head; the books and packages numbered 8,939,600, or about 8 per head; and there were

40,597,200 newspapers received and dispatched, equal to 37 per head, as against 20 newspapers per head in Victoria, where a postage on newspapers is enforced. The revenue derived from the Australasian post-offices during the year was £1,250,369, but the expenditure was £1,503,967, leaving a little over a quarter of a million to be made up from general revenue. Telegraphic communication is very freely indulged in by the colonists of Australasia. Up to the end of 1890 they had expended £3,406,119 in the construction of electric telegraphs and had 43,142 miles of lines in operation, besides 1,027 in course of construction. There were altogether 83,683 miles of telegraph wire in use and 2,701 telegraph stations. No less than 12,603,900 messages were sent during the year, the receipts from which amounted to £683,759.

Many interesting particulars are given respecting the shipping trade of Australasia, at which only a passing glance can be given. The number of vessels arriving at Australasian ports during the year was 8,791, with a burden of 7,758,459 tons. The outward shipping trade comprised 8,698 vessels of 7,636,563 tons, making a total trade of 15,395,022 tons. Sydney had a trade inwards and outwards of 3,001,221 tons and Newcastle of 1,467,578 tons. The trade of Melbourne was 4,096,982 tons and that of Port Adelaide 1,717,429 tons. The imports of Australasia during the year were valued at £67,930,876 and the exports at £64,664,574. The year's export of wool was worth £20,380,203, of which nearly £9,000,000 was the produce of New South Wales. A table is given of the export trade for each year from 1881 to 1890. New South Wales commenced the series with £16,049,503 in 1881, but in 1890 her exports were worth £22,045,937. A very different tale is told by Victoria, whose exports in 1881 were valued at £16,252,103, but had fallen in 1890 to £13,266,222. All the other colonies have increased their exports, except Tasmania, which shows a trifling decline.

From other tables it will be seen that the number of scholars on the roll at State schools in 1890 in all the colonies was 745,294, while 117,671 were enrolled in private schools. The cost to the various governments for education was £2,284,127 in all.

Out of the 2,023,340,800 acres of land in Australasia originally available for settlement 1,092,074,050 acres are as yet neither alienated nor leased, but at the end of 1890 there were 810,727,062 acres under lease. In New South Wales 148,122,194 acres were leased, and there were only 5,967,655 acres neither alienated nor leased, the greater part of which is mountainous country and, unlike the remaining portion of the colony, actually unfit for settlement.

The figures relating to Australasian agricultural cultivation show a total of 7,066,379 acres under crop, not including artificially sown grasses, which amounted to 7,787,661 acres in addition. South Australia, with 2,093,515 acres, has the largest area of cultivation; Victoria comes second with 2,031,935 acres; New Zealand, with 1,636,179 acres, is third; and New South Wales has only 852,704 acres under crop and occupies the fourth place.

The live stock of Australia consists of 114,078,977 sheep, 10,676,627 cattle, 1,697,051 horses, and 1,259,324 pigs. Of the sheep 49.08 per cent, or nearly one-half, belong to New South Wales; and 52.06 per cent, or a little more than half the cattle, belong to Queensland. New South Wales and Victoria have each a little over one-fourth of the total number of horses, and New Zealand has by far the largest proportion of pigs. The colony of New South Wales has an average area of 2.46 acres per sheep, showing that under present conditions her flocks can not be very much increased. Victoria has only 1.61 acres per sheep, so that her limit must be already reached. Western Australia, however, can accommodate each sheep with 158.56 acres, and South Australia can spare 46.33 acres to every sheep. It is somewhat remarkable that in Australasia there are as many as 3,050 sheep to every 100 inhabitants, as well as 285 cattle, 45 horses, and 34 pigs.

The mineral products of Australasia in 1890 reached the value of £12,283,391, of which New South Wales contributed £5,003,903, or 40.74 per cent, chiefly from silver, silver-lead, and coal. The proportion produced by Queensland was 20.5 per cent, and Victoria stood in the third place with 20.5 per cent. The total mineral production of Australasia up to the end of 1890 reached the enormous value of £428,125,250. More than half this amount, or

£227,357,436, is due to the gold of Victoria, the total mineral production of that colony being equal to £228,620,009. The second place is occupied by New South Wales with a production valued at £80,456,039, New Zealand being third with £55,529,645.

If space permitted, many more particulars of interest regarding the progress and present position of these colonies might be quoted from this little pamphlet; but sufficient has already been stated to show that Australasia, even at this early stage of its career, holds a by no means insignificant position among the nations of the earth.

TIMBER TRADE OF NEW SOUTH WALES.

TRANSMITTED BY COMMERCIAL AGENT BAGGS, OF NEWCASTLE.

Mr. J. Ednie Brown, the director-general of forests, in his annual report presented to Parliament, deals fully with the timber trade of New South Wales during the year 1890. On this subject he says:

"An examination of the record of imports and exports into and from New South Wales of timber and other forest products shows that the timber industry is one of very considerable importance. The quantity of dressed timber imported is estimated as amounting to 6,819,946 feet, valued at £65,018; exported timber, the product or manufacture of this colony, is estimated at 399,232 feet, valued at £2,797; the British, foreign, or other colonial timber exported was 30,305 feet, valued at £322; or a total export of 429,537 feet of dressed timber, valued at £3,119. Of rough timber we imported 50,333,194 feet, valued at £340,058, making a total of £405,076 expended in the importation of rough and dressed timber. We exported 20,819,829 feet of our own native timber in the rough, valued at £80,984; and of British, foreign, and other colonial timbers we exported 3,168,912 feet, valued at £18,157; making a total of 23,988,741 feet of exported rough timber, valued at £99,141, or a total value of rough and dressed timber exported of £102,260.

"One circumstance worth remarking is that we imported 1,935 tons of firewood, valued at £1,570. Our exports of this useful commodity, however, amounted to 8,994 tons of New South Wales timber, valued at £2,481; and 150 tons of other timber, valued at £225; being a total export of firewood of 9,144 tons in weight, valued at £2,706.

"Next to timber, the most important item is evidently that of bark used for tanning leather and other purposes. In this our imports were 61,220 cwts., amounting to the respectable total of £24,610. Of New South Wales bark we exported 18,649 cwts., valued at £5,169; bark, the product of other colonies, we exported to the extent of 17,125 cwts., valued at £25,488; or a total export trade in bark from this colony of 35,774 cwts., valued at £10,657.

"Shooks and staves were imported to the extent of 503,968 packages, valued at £5,015; on our own part we exported 15,983 packages of shooks and staves produced in the colony, valued at £3,808; and 11,083 packages from other sources, valued at £2,694; making a total export of 27,066 packages, valued at £6,502.

"Posts, rails, and spars, our own production, were exported to the value of £287.

"Of laths 2,677,767 were imported, valued at £3,712. In exports, however, we do not appear to have any of local manufacture, the exports in this line being 599,700 the production of other sources, and valued at £746. Likewise shingles—we imported them to the number of 30,300, valued at £55, while in exports of our own production we were nil; but we apparently reëxported 24,000 shingles, valued at £50.

"Coming to those useful articles, pitch, tar, and resin—whilst we imported 2,897 barrels of pitch and tar, valued at £3,259, we only exported 612 barrels of New South Wales production, valued at £600; but we appear to have reëxported 286 barrels of imported, valued at £439; being a total export of 893 barrels of pitch and tar, valued at £1,039. In resin there was an importation of 4,331 casks, valued at £3,904. In exports of New South Wales resin we are nil, but 1,206 casks of resin were reëxported, valued at £1,337.

"Of turpentine we imported 63,207 gallons, valued at £8,143. We exported no turpentine of local production, but reëxported 1,889 gallons, valued at £298.

"It is noticeable there is not any record of any of the following having been imported: Cabbage tree, posts, rails, and spars. On the other side, in exports of local production we are nil as regards charcoal copra, corks and bungs, fiber, gum, kapok, resin, sandalwood, laths, pailings, shingles, and turpentine.

"There are other lines in which our exports of local production are exceedingly small compared to importations of the same material. We imported boats to the number of 60, valued at £6,338; and we exported 28 boats of local manufacture, valued at £2,165, together with 3 boats reëxported, valued at £69; making at total of 31 boats exported, valued at £2,234. Of charcoal 227 tons were imported, valued at £777. Copra amounting to 4,868 tons, valued at £52,299, was imported; 4,534 tons being reëxported, valued at £56,272. Corks and bungs to the value of £17,183 were imported, of which £3,292 worth was reëxported. Of wooden doors we imported 30,821, valued at £17,269; and in exports it is recorded we exported 10 doors of local manufacture, valued at £12, and 627 doors of foreign manufacture, valued at £326. The fiber importations amount to 18,184 packages, valued at £3,095, of which 5,122 packages, valued at £553, were reëxported; 1,489 sashes, valued at £838, were imported; 76 sashes of colonial make were exported, valued at £38; and 607 sashes were reëxported, valued at £217. We imported 1,102 packages of gum, valued at £3,312, of which there was a reëxportation amounting to 889 packages, valued at £2,743; £15,995 worth of kapok was imported, and £3,124 worth was reëxported; 8,366 oars, valued at £1,757, were imported; 150 of New South Wales manufacture were exported, valued at £77, and 2,702, valued at £918, were reëxported. Sandalwood weighing 80 cwts., valued at £34, was imported, the outgoing being a reëxport of 37 cwts., valued at £29. While we imported £26 worth of shutters, we exported £23 worth of colonial-made shutters; 2,577 packages of turnery, valued at £3,744, were imported; we exported only 32 packages of New South Wales make, valued at £64; and 1,683 packages were reëxported, valued at £2,192. Of pailings we imported 114,670, valued at £932; the export of local manufacture or foreign being nil.

"The total value of importations of forest products, etc., during the year amounted to £597,543, while the exports amounted to £197,851 in value. Of these exports £99,293 worth may be regarded as simply reëxports, leaving £480,250 worth of imported material for consumption within the colony.

"The total export of articles produced or manufactured from forest products within our own borders amounted to £98,558. With what I take to be local consumption of £480,250 worth of imports and the exports of £98,558, we have a total sum of £578,808 involved in the demands of our timber trade, and probably we may even add to that sum the value of reëxported materials, which gives us the grand total of £678,101.

"These figures do not, however, represent the whole of our timber consumption or trade demands, for there is that immense consumption of indigenous timber for fuel, building, and general purposes of which we have at the immediate moment no estimate or data.

"Surely this colony, with its immense resources, should endeavor in every possible way to meet this demand for forest products with material from our own forests of timber grown in them both of indigenous and exotic kinds; and as, however, some of the imported materials are manufactured from woods of a softer and more pliable nature than can be obtained from our indigenous woods, the necessity for more attention being given to plantations of exotic timbers is here strongly illustrated."

FOREIGN TRADE OF ITALY.

REPORT BY CONSUL-GENERAL BOURN, OF ROME.

Table showing the foreign commerce of Italy for the first nine months of 1890 and 1891.

IMPORTS.

Articles.	1890.	1891.	Difference.
	Lire.	*Lire.*	*Lire.*
Spirits, wine, and oils	26,070,196	22,623,069	— 3,447,127
Groceries, spices, and tobacco	61,659,068	59,883,118	— 1,775,950
Chemicals, drugs, resins, and perfumery	36,299,461	31,137,586	— 5,161,875
Dyes, dyestuffs, and articles for tanning	17,706,692	16,206,625	— 1,500,067
Hemp, flax, jute, etc	19,889,803	18,338,494	— 1,051,309
Cotton	147,198,780	139,065,912	— 8,132,868
Wool and hair	69,870,730	69,832,280	— 38,450
Silk	59,670,913	60,943,606	+ 1,272,693
Wood and straw	32,946,096	29,891,010	— 3,055,086
Books and paper	9,097,155	8,658,430	— 438,725
Skins, hides, and furs	33,033,779	31,843,935	— 1,189,844
Minerals and metals	126,594,838	97,219,931	— 29,374,907
Stone, earth, pottery, and glass	110,551,684	109,281,917	— 1,269,767
Cereals, flour, and vegetable products not elsewhere included	153,602,211	101,836,638	— 51,765,573
Animals and animal products not elsewhere included	73,734,774	60,104,798	— 13,629,976
Miscellaneous	11,140,143	9,440,481	— 1,699,662
Total	989,066,323	866,807,830	—122,258,493
Silver and gold	42,862,900	41,039,800	— 1,823,100
Grand total	1,031,929,223	907,847,630	—124,081,593

EXPORTS.

Spirits, wine, and oils	67,830,152	91,297,780	+23,467,628
Groceries, spices, and tobacco	5,740,958	4,908,682	— 832,276
Chemicals, drugs, resins, and perfumery	33,288,796	30,657,759	— 2,631,037
Dyes, dyestuffs, and articles for tanning	7,246,852	5,865,649	— 1,381,203
Hemp, flax, jute, etc	29,118,278	24,988,712	— 4,129,566
Cotton	21,102,072	23,477,308	+ 2,375,236
Wool and hair	7,395,850	7,616,150	+ 220,300
Silk	223,727,265	227,410,916	+ 3,683,651
Wood and straw	26,319,331	22,759,718	— 3,559,613
Books and paper	8,348,079	5,523,818	— 2,824,261
Skins, hides, and furs	15,979,690	18,709,075	+ 2,729,385
Minerals and metals	19,884,060	25,322,424	+ 5,438,361
Stone, earth, pottery, and glass	39,962,324	36,808,768	— 3,153,556
Cereals, flour, and vegetable products not elsewhere included	55,549,601	55,092,618	— 456,983
Animals and animal products not elsewhere included	69,139,973	75,380,686	+ 6,240,713
Miscellaneous	1,826,474	2,282,776	+ 456,302
Total	632,459,755	658,102,839	+25,643,084
Silver and gold	52,612,000	46,142,200	— 6,469,800
Grand total	685,071,755	704,245,039	+19,173,284

AUGUSTUS O. BOURN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rome, November 5, 1891.

COMMERCE OF GLASGOW.

REPORT BY CONSUL BROWN.

I have the honor to submit herewith a report for the fiscal year ending September 30, 1891.

By comparison with my report for the fiscal year ended September 30, 1890, some changes as to imports and exports from and to the United States at this port will be noticed. The total export for the year just closed is $6,244,623.95, being a decrease, as compared with last year, of $1,719,-681.46. The records show a steady decline since 1888, when exports reached a larger figure than ever before, that year showing an increase over 1887 of nearly $1,500,000.

The decline for the current fiscal year may be accounted for partly by reason of this steady decline, the new tariff law, and the new administrative customs law.

There has been an increase in many lines of goods, notably in cotton goods, chemicals, muslin, and wool, and a decrease in fire-clay goods, thread, and union goods (cotton and woolen), the latter showing the most marked decrease. In fact, the item of union goods accounts for about two-thirds of the decrease, the export value this year being $285,493.92 and last year $1,285,467.78, being a decrease of $999,973.86.

Referring to the return of sailing vessels at this port, it is seen that there is an increase of coasting vessels to the number of 79 and a decrease of vessels engaged in foreign trade of 13.

In the matter of imports into this district, we find there is a decrease of 67,818 cwts. in beef and a decrease of 4,289 head of live cattle, the total for this year being 30,828. My own observation satisfies me that these figures are wrong, and that there has been an actual increase; but we find no mistake in our compilation of the returns, and hence give the figures of the Clyde bills of entry.

There were 1,443 sheep imported this year; none last year.

Imports of wheat have increased by 666,798 bushels, the total being 2,118,823 bushels.

Indian corn shows a decrease of 2,611,382 bushels, the high price preventing the usual purchases.

Flour shows a decrease of 1,273,423 cwts., notwithstanding the large increase in wheat. This may fairly be attributed to the handicapping of the flour trade by the unreasonable and unjust bills of lading which shippers of flour are obliged to accept; for I believe it is acknowledged that American flour has no superior, if an equal, anywhere.

Oatmeal has fallen off almost entirely, the high price of oats in America doubtless being the cause.

Butter and cheese both show a decrease, while lard, bacon, and pork show an increase.

On the whole, the imports from the United States have been satisfactory in both quantity and price.

The trade of Glasgow and the district, speaking in general terms, has been fair, judging from observation and such data as is at hand. Business reports are here made current with the calendar year, and exact information is unattainable.

The strike of the iron-workers (blast-furnace men) at the close of last year and the railway strike at the beginning of the calendar year undoubtedly worked considerable injury to the general trade of the district; yet, judging from the Clyde trust report, local trade in some directions has been very good.

Shipbuilding is remarkably well sustained, though there is a marked change from steam to sailing vessels; the combined tonnage of steam and sail being much in excess of what had been built up to this time last year.

Should returns which are published at the close of the calendar year show a condition of trade—especially as to shipbuilding—justifying an additional or supplemental report, the same will be made early in January, 1892.

LEVI W. BROWN,
Consul.

UNITED STATES CONSULATE,
Glasgow, October 21, 1891.

INTERNATIONAL STATISTICAL CONGRESS.

REPORT BY CONSUL-GENERAL GOLDSCHMIDT, OF VIENNA.

The biennial International Statistical Congress, which has been in session for one week in the city of Vienna, opened on the 28th day of September last at the University Palace and adjourned on the 4th of October to convene again in Chicago in 1893, the two previous meetings having been held in Rome and Paris.

The deliberations of the Vienna congress and the subjects discussed are of such universal interest and vast importance, and the men of science who took part in this discussion of such undoubted ability and world-wide renown, that, aside from the fact that the next congress will sit in the United States, at the city of Chicago, I believe it to be quite within the scope of my consular duties to submit a short report of the proceedings of the congress to the Department.

The president, Sir Rawson Rawson, in his opening address said that this was the third biennial session of the institute, and at the same time the sixth anniversary of its existence; that they sincerely hoped that distance, differences in language, racial susceptibilities, and political considerations might in the future place as few obstacles as possible in the way of these scientific reunions, which are calculated to foster internal concord; that national movements, happily, were tending more and more in that direction; that proof

of this was afforded by the multiplicity of international congresses, by more frequent personal intercourse between sovereigns and statesmen, and by freer communication between nations themselves, that communication being favored by increased facilities of transport and encouraged by the municipal and central administrations of almost every country; that the existence of this institute was in itself an additional illustration of this international *rapprochement*. He was convinced that in a few days he should be authorized to declare at the close of their labors that the bonds of amity and affection which the meetings held at Rome and Paris had created and strengthened would be drawn still closer at Vienna, and he trusted that they would continue to subsist in order to unite all their hearts as science had united their minds.

He said that among the questions which were to be discussed by the congress were two which merited special attention—the proposal to prepare reports upon the numberings of the people which had taken place in various countries during 1890 and 1891, the returns being considered from a demographic point of view, and the proposal to make an international study of anthropometry, with special reference to the physical condition of the people in relation to their social and moral progress.

Alluding to the progress which had been made in statistical matters in various countries, the president noted with satisfaction the creation in France of a labor exchange and in Great Britain of a ministry of agriculture. He said that these two institutions, founded, perhaps, somewhat tardily after the way had been shown by other countries, constituted an official declaration of the necessity in which governments found themselves to bring together exact information on these two sources of national life—agricultural production and labor; that the supreme importance of these two factors made itself felt more and more every year; that the constant increase of European populations—the problems which came to the front with so many disturbing elements as to the employment and conditions of labor—demanded the most searching investigation; that a glance at the programme of this congress would show the interest which the members of the institute took in the labor question; that the debates upon which they were about to enter would afford valuable guidance in the examination and comparison of international and labor statistics.

In concluding, Sir Rawson Rawson dwelt upon the serious practical character of the work upon which the congress was engaged, contending that it possessed universal interest and merited the attention and personal coöperation of the statesmen of every country and of all who were charged with the administration of economic or social affairs.

The second day M. Levasseur, of Paris, read an interesting paper as to the extent and manner in which certain statistical results might be utilized in primary and secondary education, arguing that as a means of education in schools statistical information might be advantageously employed to a much greater extent than at present.

Signor Bodio, of Rome, discussed the question of more complete criminal statistics; and M. Bela Földes, of Buda-Pesth, read a paper on the subject of the recidivists in Hungary.

Prof. Lexis, of Göttingen, on the following day read a paper on the elements of demography, while the Nestor of statistics in Germany, Dr. Ernst Engel, proposed the adoption of a new method to ascertain the cost of living of the different classes of people in Europe. He proposes to apply 100 units for each person, and, in addition to this, 100 units for each ten years; for instance, a child five years old to 1.5 units, a child ten years old to 2 units, a man 25 years old equal to 3.5 units, a person 20 years old to 3 units, etc.

Dr. von Mayr, of Strasburg, read a treatise on the best method of preparing official statistical publications. From the discussion which took place upon the latter it was clear that the congress entirely shared Dr. Mayr's opinion that the inadequate manner in which statistical material was at present utilized showed great disregard for the public interest.

The next day Dr. William Ogle, of London, in a paper on the condition of the working classes in London, especially in relation to the questions of family, housing, and rent, examined a set of returns which had been obtained by the British Government in the following manner: Four districts, mainly inhabited by workingmen, were selected in various parts of London, and cards with a series of printed questions were freely distributed in them to all workingmen, one card being given to each distinct family, while single men living by themselves were reckoned as families; the cards were then collected and tabulated. The total number of men who gave answers to the questions was 29,451; but of these 8,008, or 27 per cent, were out of work at the time of the inquiry. The remaining 21,443 men, with their wives and families, made up a population of 97,784 persons. Of the men 18,472 were married and had among them 54,889 children, while the 674 who were widowers had 1,299 children.

Commenting on these results, Dr. Ogle remarked that the English were a people much given to marriage, and the men married at a very early age—at an earlier age than in any other part of Europe, with the exception of Russia—and that of all the classes in England those who married earliest were the workingmen, the difference in the mean ages at marriage of artisans and of the professional and independent classes being almost six years; that only 197 in 1,000 of the men included in the foregoing return were unmarried, whereas the proper proportion, had it been such as would be calculated from their age distribution and from the civil condition of the general male population of England, would have been 266 in the thousand; that it was true the comparison was not a perfectly fair one, because only men living in their own lodgings apart from their parents received cards, and some young men of marriageable age would doubtless be living with their fathers; that still the vast difference between 107 and 266 in the thousand was too great for any such explanation, and it must be concluded that

in London, as elsewhere, those who were least able to maintain a wife and family were those who were in the greatest hurry to charge themselves with this burden; that the family of the married men consisted, on an average, of five persons—the man, his wife, and three children; that when it was borne in mind that the great bulk of these married men were still in the prime of life, and that their full number of children was not yet born, and, further, that the death rate of the children of the working classes in large towns was excessively high, so that a considerable proportion of the children born must have already died, while some of the older children must have left their parents to earn wages on their own account, the proportion of 2.97 children to a man was extremely high, since the average number of live-born children to a marriage in England did not exceed 4 by more than a minute fraction; that the explanation was, of course, to be found in the early marriage age, which implied an early and numerous progeny; and that every married man had, then, on an average, five persons to maintain.

Dealing next with the question of housing, Dr. Ogle showed that more than half the families had three or more rooms at their disposal; that rents varied from under 3*s.* to 8*s.* per week; that the most common rent, however, was from 4*s.* to 6*s.*, and the average worked out a little over 6*s.*; that, on the question of wages, the unchecked returns made by workingmen were especially liable to suspicion; but, taking the returns as they were made, it appeared that the weekly wages of the workmen engaged in a large number of different occupations varied from less than 7*s.* to more than 30*s.* a week, and that as many as 28 per cent of the men were receiving this last amount; that calculation which took into account, on the one hand, the men out of employment, and, on the other, the amounts earned by other members of the family showed the weekly receipts to be, on the average, 26.19*s.* for the men in work and 19.8*s.* for the whole body of men, whether in or out of employment.

Summing up the whole situation, Dr. Ogle submitted to the congress the following conclusions: (1) That the workingman marries at a very early age and has consequently a very large family to support, the average number of children actually living with each married man being three; (2) that the average weekly income of the men, when in work, from all sources amounts to 26.19*s.*; (3) that of this income he expends, on an average, 23.5 per cent upon house rent, the proportion varying inversely with the amount of income; (4) that the house accommodation is such that on an average there are 1.65 persons to a room; and (5) that the cost of such accommodation is, on an average, 2.19*s.* a week per room and 1.33*s.* for each person.

The congress next took up the question of labor statistics.

Mr. R. E. L. Gould, of the United States Department of Labor, gave an interesting account of the progress of labor statistics in the United States.

He remarked that the United States was the first nation to officially recognize the utility of statistics in the investigation of labor problems; that in no other country did the idea seem to have taken such deep root, or to have

been carried to so complete a development; that within the last twenty-two years a national Department of Labor and twenty-five State bureaus have been called into existence; that the United States afford a peculiarly favorable field of operations; that the working classes are, generally speaking, well organized and intelligent; that there is amongst them a growing disposition to seek for accurate information regarding their present condition, and the policy of the leaders in the labor movement is to seek for the justification of their aims through ascertained facts rather than to found them upon considerations of theoretical justice; that American employers of labor are again much less secretive and more ready to furnish information affecting their own interests and those they employ than in other countries; that in the beginning they were cautious enough, but they have learned from experience that what would in many places be considered a business secret may be disclosed without any resulting harm, provided it is done impersonally and in such a way that the source of information can not be identified; that in round numbers 130,000 volumes of labor reports are annually printed in the United States; that about 70 per cent go directly into the hands of the working people, the remainder being absorbed by newspapers, public libraries, members of the legislature, college professors and teachers, lawyers, clergymen, and manufacturers; that in the United States public documents are free and supplied upon demand; that people who are interested enough to ask for them are pretty sure to read them.

He said that the function of bureaus of labor statistics is mainly educative; that it is therefore a difficult matter to estimate exactly the amount of influence they have exercised; that a great deal of useful legislation stands as the direct result of their efforts; that in Massachusetts, for example, the establishment of a board of arbitration and conciliation, and in other States many useful measures in which labor is more or less directly interested, owe, if not their initiative, at least their passage, to the active indorsement of the respective bureaus; that a final and most hopeful sign of progress is a marked growth of public confidence; that it is a common mistake to suppose that bureaus of labor statistics were created to advocate solely the claims of workingmen; that labor organizations have everywhere demanded their foundation, but have always regarded them as organs of enlightenment, not as agencies of propaganda; that in the State of Connecticut a prevalent feeling had grown up that the profits of capital in industry bore a disproportionate ratio to the share of wages; that, in order to establish the truth or falsity of the idea, an investigation was made, several hundred manufacturers cordially coöperating by putting into the possession of the bureau the most private information regarding their business affairs; that the commissioner asserts that not a single complaint has been made to him of secrets violated or of harm done; that the most remarkable feat yet performed is the recently concluded investigation of the United States Department of Labor, which was pursued in Europe as well as in America; that the subject-matter of the inquiry related to an analyzed cost of production of plain units of manufacture in the

industries of coal, coke, iron, steel, glass, cotton, woolen, silk, and linen goods, the relation of the labor cost to the total cost of manufacture, and the earnings, efficiency, and cost of living of the working people employed; that here is a line of facts pregnant with interest in connection with tariff matters, yet they are exceedingly difficult to obtain because of the notion that trade secrets might be exposed or commercial interests injuriously affected; that these data, when published, will give really accurate knowledge upon comparative conditions of competition; that a large part of industrial strife and social discord is due to a misconception of the facts involved; and that agencies consecrating themselves to the acquisition and dissemination of reliable knowledge can not fail to cultivate a better understanding and to operate powerfully in the interests of social peace.

Among the other papers read was one by Dr. Ernst Angel on the creation of an international society for the study and promotion of anthropometry, and one by Dr. von Boehmert giving statistics as to the wages and manner of payment of the working classes. Dr. Angel further read a paper on the household expenses of workmen's families.

On the following day's sitting of the International Statistical Congress Mr. Bateman, chief of the commercial department of the board of trade, read a paper on the comparability of trade statistics of various countries.

He said that more than a year ago the British colonial office appointed a committee to inquire into the methods at present adopted in the various colonial possessions of Great Britain for registering imports and exports; that this committee, which consisted of representatives of the colonial office, the India office, the customs, and the board of trade, had now completed their report, and it was likely to be adopted, at least in all the Crown colonies, before long; that, with regard to the other colonies, namely, those with responsible governments, it would be in the discretion of the governments of those colonies to carry out or not the suggestions made by the committee; that in all probability, however, the recommendations would be brought into effect throughout the greater part of the British Empire, so that the trade statistics of the mother country and the various colonies would be capable of much easier comparison than had hitherto been the case; that several of the recommendations related to points which had already received the attention of the International Institute of Statistics; that thus the method of valuing imports was shown to be defective in many of the British possessions, only the value at the ports whence the imports were shipped being given in about half the colonies; and that, as regards the registration of countries from and to which goods are imported and exported, the colonial committee did not recommend attempting to show the country of original production or ultimate consumption, but contented themselves with the record of the commercial transaction between two countries, so far as it was possible to show this by the movement of trade.

Prof. Cheysson, inspector-general of roads and bridges, Paris, introduced the report of the committee on statistics as to the means of inland convey-

ance and recommended the construction of comparative diagrams illustrating the traffic on the various routes.

Another interesting paper in the commercial section was one by M. Kiaer on the unification of the registered tonnage of vessels. The report of the committee to which the subject was referred recommended that the attention of the governments interested should be directed to the inconvenience of the present system, and that they should be urged to submit the tonnage regulations to the consideration of an international commission of experts.

M. Jurgon also read a paper, giving statistics as to the trade and labor unions in France.

At the afternoon sitting M. Bertillon explained his scheme for professional classification in the taking of the census. His proposals gave rise to an animated discussion, but were ultimately adopted as the basis for a definite system of nomenclature.

On motion of Mr. Inama Sternegg, of Vienna, a committee was appointed to draw up a scheme for an international convention to secure the mutual interchange of official emigration statistics in different countries. So far but little material is at hand in Europe on this important question of emigration, a question of equal interest to both hemispheres. No doubt at the coming congress at the city of Chicago in 1893 this question will form a foremost subject for discussion.

JULIUS GOLDSCHMIDT,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, October 20, 1891.

COMMERCE OF EDINBURGH AND LEITH.

REPORT BY CONSUL BRUCE.

HERRING FISHERY.

The early-herring fishing season opened in May, 1891, with good prospects of high prices being got for cured herrings. Fish-curers were therefore eager to get the first-class boats engaged for this fishing, and so keen was the competition among them that the prices at which they were ultimately engaged reached the almost unprecedentedly high figure of $4.86 per cran* with $292 per boat bounty or gift.

As the fishing proceeded it was much interfered with, owing to storms and mists; so much so that at the end of the season it was found that the

* The cran is a measure equal to about 37½ gallons and contains from eight hundred to eight hundred and fifty fresh herrings, weighing 3¼ cwts. On January 1, 1890, a quarter-cran measure was brought into use approved by the fishery board of Scotland "for buying, selling, delivering, or receiving fresh herrings in the Scotch herring fishery, being a measure of such capacity that four times its contents when filled with herrings shall be equal to 1 cran." This quarter-cran measure, as required by the fishery board, is "a basket of a circular form, well bound, and of suitable strength, which shall, for convenience in use, have two cane handles" and be of the following dimensions: Interior diameter at bottom, 14½ inches; rise in the bottom, 1½ inches; interior diameter at mouth, 17½ inches; diagonal measurement from inside the bottom to the inner side of the mouth, 21½ inches; height inside, 14½ inches.

average catch per boat did not exceed 17 crans, thereby costing the curers very high prices indeed. The total catch at Barra for the season was about 6,000 crans as compared with about 7,500 for last season. At Stornoway, however, the fishing is very heavy, and at the end of the season there it was found that 100,000 crans had been landed by about eight hundred boats. Prices at Stornoway, where there are no engaged boats, herrings being bought daily from the auctioneers, ranged from $2.43 to $7.30 per cran.

On account of the heavy catch at Stornoway, the prices on the continent of Europe fell considerably, and the prospects of good prices for the fishermen were not at all bright. It was soon seen, however, that the season was too much below the average, and prices rose to a figure which had not been reached for a number of years; so that, notwithstanding the short yield, the season has been one of the most remunerative to the fishermen they have had for a number of years, owing to the high prices paid them.

Numbers of fish-curers speculated largely, expecting that markets would rise accordingly; but, as the markets, though very fair, did not reach to such high prices as curers had reckoned on, a considerable loss will be sustained by many of the curers who so speculated.

The following is a statement of the season's herring fishery on the east coast up to the 26th of September, with statement of the catch at same date last year:

Kinds.	1891.	1890.
Herrings, landed.....crans...	639,416	816,088
Herrings, cured (gutted).....barrels...	692,926	878,084

The quantity of herrings branded under the regulations of the fishery board for Scotland was as follows:

Description.	1891.	1890.
	Barrels.	*Barrels.*
Large full, crown brand	4,672	12,919
Full, crown brand	112,509½	155,744½
Mattie full, crown brand	63,948½	116,861½
Spent, crown brand	54,306	51,437
Mixed, crown brand	16,388	38,118½
Total	251,824	375,080½

There were exported 557,045 barrels in 1891, against 703,588½ barrels in 1890. The "barrel" has a capacity of about 26⅔ gallons, the contents weighing probably 240 pounds.

AMERICAN TRADE WITH LEITH.

From August, 1890, to August, 1891, trade by the Arrow line has not been bright; but matters have considerably improved, and for the next six or nine months the busiest season since America commenced to export

to this country is hoped for. This is, of course, owing to the large harvest in the United States and the correspondingly low one in this country.

Freights have ruled low during the period above named, but now they are high and improving still. During this period the chief imports by the Arrow line were 1,269 tons of maize, 1,060 tons of barley, 19,080 tons of wheat, 347,702 sacks of flour, 12,703 barrels of paraffin scale, and 800 hogsheads of tobacco. The other imports comprise the usual variation of American wooden manufactures, provisions, oil cake, etc. Apart from these, the steamers have had large quantities of through traffic from Savannah, Charleston, Galveston, and New Orleans to continental and Baltic ports, Leith being a handy port for the through transit. Large consignments of cattle have also been carried to London and Glasgow, Leith not yet being licensed for the landing of American cattle, although those from Canada are now allowed to be sent. The trade from Baltimore has ceased, as it could not compete with New York. Altogether the last twelve months have been very unsatisfactory for homeward business, but the next year promises to make up the deficiency.

The outward trade continues good, and large shipments of jute goods, waste paper, pitch, tar, etc., have been sent forward.

TWEED CLOTH.

This branch of the woolen industry is not in such a satisfactory state as was hoped for by the manufacturers. In December, 1890, most of the factories were not turning out more than half of what they could make. For the winter of 1891 homespuns were evidently taking very well and crossbred worsteds were also retaining their firm hold. Knickerbockers, which have had such a run for several recent seasons, lost their popularity a little. Blues, smokes, and slates, which have been the leading colors, gave place to mouse browns, blue browns, and red browns. Toward the close of the year the trade outlook was by no means promising, and very few orders were on hand. One of the largest mills commenced the "half-time" system, while in others the power-loom weavers were idle for several weeks at a time. During the opening month of the year 1891 the trade was marked by an exceptional dullness when contrasted with preceding years. The alleged causes were the new tariff, the exceptional mildness of last winter, the nonconsumption of heavy goods, and the great crisis which one of the large banking houses passed through. Manufacturers reported that orders for the winter season were coming in slowly, and, as trade had become worse, it was feared that there would be no immediate improvement. The railway servants' strike told very much in this district, mill-owners being in want of coal, yarn, etc.

It was believed that this year would be better than last and probably be the turning point for some years to come, especially as there has been a decided favor shown for Scotch tweeds during the last few months. Toward the end of January, however, repeat orders did not come in, confirmation

of orders for next season were very scarce, and altogether things looked very gloomy. It is long since there was so great a stagnation of trade in the border towns. It seemed that this was caused principally by the want of repeat orders to fill up and tide over the time between seasons, makers getting quickly through with their first orders.

During February the trade of this district still continued quiet. A large number of the looms were standing idle, and some of the principal mills were still on half time. As orders for the spring season had by this time almost entirely come to an end and orders for the winter season were coming in very slowly, prospects were not improved. There was no very brisk demand for either home-grown or colonial wools, and, as the consumption lately has been only moderate and prices have been well maintained, manufacturers declined to buy more than was absolutely necessary to meet pressing wants. The considerable fall in the price of wools during the concluding months of last year had a most unsettling tendency and caused manufacturers and merchants to withhold their orders. Several important wool dealers were then of opinion that the large consignments of wool which were blocked in Australia by the dockers' strikes there would be finding their way to this country and would produce a still further temporary fall. This prediction, however, was not realized, and in the light of the keen competition and tolerably remunerative prices obtained at colonial wool sales in London there seemed every likelihood of values being fairly good. The average amount of orders obtainable when trade is brisk could not be booked, and the keenness of competition had the effect of cutting down profits to a very fine point. Though demand had naturally increased with the growth of population, it seemed as if the sources of supply had developed with a disproportionate rapidity. This depression was chiefly attributed to the restricted number of repeat orders for summer fabrics, due in some degree to the animated competition now developed on the Continent. There has always been a considerable amount of prejudice in this country against continental makes, and the protective tariffs imposed by foreigners have had the effect of causing border manufacturers to do their utmost in the direction of cheapening production while maintaining the high quality of the goods produced.

During March, as the season advanced, trade improved with manufacturers. The improvement was slow but decided. Confirmation orders for the winter season were coming in very much better than was expected. Some of the principal makers were also receiving considerable repeat orders for spring. Spinners had a fair amount of work in hand, but with not much before them, orders being very much from hand to mouth with them.

In April the improvement which took place before the Easter holidays was well maintained. Buyers were operating freely, winter orders being placed up to the average. The low scale of prices for all classes of tweeds could not be maintained when a marked advance took place in the price of wool, and the classes for worsteds was decidedly dearer. The tweed trade was fairly well employed, and there was more machinery running than there

had been for six months. The styles in demand were varied. The demand for local carded yarns had greatly improved.

In May, owing to the firm tone prevailing at the London sales and the slightly advanced prices obtainable both for home and colonial wools, buyers were operating more freely and with greater confidence, knowing that there was small probability of prices declining, at least not before the clip of the coming season was in the market. Wool was disposed of privately in considerable quantities during April. Operatives were well employed, and in several instances the machinery was running overtime. The looms were kept very busy, while the spinning branches of the more enterprising firms were working a double shift in order to overtake urgent orders. The general output of woolen goods continued to increase despite the shrinkage of trade in certain quarters. The largest trade of the year is usually done at the metropolis in May, and this year's display was looked forward to with great interest, as it promised to be above the average. The low prices of that time, coupled with the fact that the spring orders of last year were somewhat limited, indicated that on this occasion a good stroke of business would be done.

During June the prices of both home and colonial wool were generally well maintained. Stocks were, as a rule, comparatively light. Owing to the protracted spell of barren weather, it was probable that the clip of the coming season would be a few weeks later than usual in being put into the market, and it was calculated that the requirements of the following six weeks would almost use up last season's production. In the tweed department manufacturers reported that work was plentiful and prices tolerably remunerative. A few of the less enterprising firms, it was true, were doing less, but the others were busy. The attention of makers was being largely directed to preparing for the production of next season's goods. A healthy tone prevailed in the spinning trade, and spinners were securing contracts at slightly advanced prices; and dyers, though not oppressively busy, were fairly well employed. Altogether, the trade of this district was fairly good for such a time of the year, and, although the usual time between seasons when manufacturers expect a falling off for a month or so was near, still many of the principal makers had a good amount of work in their books. The condition of matters was varied, some makers having as much as they could do, while others had not.

In July manufacturers were fairly busy and running all their machinery full time. One or two were so heavily placed with orders that they were considerably behind with their deliveries. Repeat orders came in much better this season and filled up the interval that generally ensues before spring confirmations arrive. This kept the looms fully employed and the output at its maximum. The rising price of wools enabled buyers to operate freely, and spinners were exceptionally busy and getting the advanced prices which they were asking.

In August the trade in the district continued good for the time of the year. The looms of nearly all the principal makers were fully employed. For next season the reports were generally good, but confirmations of spring orders with some makers were coming in slowly.

The month of September showed an improvement, but of an almost imperceptible character.

In October of last year inquiries were made in all the principal manufacturing centers in the south of Scotland with the view of ascertaining the practicability of forming a syndicate to purchase all the Scotch tweed mills in Scotland, but the scheme fell through. In the same month a large firm of woolen manufacturers in Galashiels was converted into a limited-liability company. The shares were not offered to the public, but are held by the then partners and relatives.

During the past year the additions to factories have been almost nil, while one factory in Galashiels changed hands, the outgoing firm having had to suspend payment. Perfect sympathy between masters and men continued uninterrupted during the whole of the past year. It may be interesting to add that the Galashiels power looms turn out annually sufficient cloth to make one and a quarter million of suits of clothing for full-grown men.

In conclusion, it may be said that in August of this year two Galashiels workmen with a superior technical and practical training went to Portugal to manage the woolen factory of an English joint-stock company, but, owing to prejudices raised against them by the Portuguese in consequence of the introduction of certain improved methods for the working of the factory, they were compelled by threats of bodily harm to return immediately to Scotland.

HOSIERY.

The hosiery trade of the south of Scotland continues much in the same state as last year. The spell of sharp weather which prevailed during the closing months of 1890 was the means of increasing orders for hosiery, and the prospects for 1891 were consequently very favorable. Manufacturers had a greater difficulty in stocking than in former times, owing to the growth of variety in the styles of their goods. A new sort of yarn, introduced within the last year or two, known as "sanitary" or "natural," and much recommended by the medical faculty and hygienic authorities, was and is in great demand and seems to be taking the place of ordinary lambs' wool. Hosiery manufacturers are, as a rule, fairly busy, and several firms have a large complement of orders on hand. The outlook is most encouraging all over, the few firms who are noted for the production of the finer class of novelties being well employed.

The volume of trade may be said to have slightly increased. The trade in light makes for summer wear has been somewhat diminished, consequent on the very cold spring and unfavorable summer weather; but, on the other hand, the demand for heavier goods for winter wear has been increased,

especially in ladies' goods. There is no feature in the trade calling for any special remark.

AGRICULTURE.

The present year has brought no improvement in the position and prospects of the farmer. A mild February was followed by a severe March. Vegetation made unusual progress during the former month, but it was so severely checked during the latter that the country had a very bleak appearance, the grass having been nipped by the frost and the cold northeasterly winds that prevailed. The consequence was that keep for sheep was scarce, all the more so as the stock of turnips had been greatly reduced in some districts. Turnips, whether exposed in the fields or stored in the pits, were not seriously injured by the frost; but the crop proved less bulky than was estimated at the beginning of winter, and the supply on most farms was rapidly reduced. Sheep-owners on the low-lying lands were therefore put to extra expense in feeding their flocks. Of late the flocks on the hills have had a trying experience. In the parks the lambing was favorable, but the ewes required a liberal supplement of nourishing food to eke out the scanty herbage. In this connection it may be remarked that the wintering of sheep is proving an unprofitable business. Those farmers who purchased clipped sheep or lambs last autumn pocketed a poor margin of profit to pay for the home-produced food they have consumed. Dealers who take turnips from the farmers at a fixed sum per week for sheep fed upon them lost from $1.21 to $1.70 per head on the season's transactions. However, those who feed sheep which they breed have less reason to complain, though they received during the earlier months of the present year upwards of $2.43 per head less for their fat sheep than they did at the corresponding season of last year.

Fodder, both hay and straw, was plentiful, so that with a supplement of cake the scarcity of roots was less felt in bringing bovine stock through the spring until the grass came. Cattle-feeders have fared better than sheep-feeders during the winter. Profits have not been large, but prices have, on the whole, been moderately steady.

There was great diversity in the forwardness of farm work in different parts of the country. February was most favorable for plowing, but it was often interrupted and occasionally completely stopped during March. In some localities much of the cereal seed was sown and some progress made with preparing the ground for the planting of potatoes. In other parts, again, seed-sowing was little more than begun in March, and some plowing—even for the white crops—had to be overtaken. Those farmers who were fortunate in having a prolific crop of potatoes last year realized good profits, as all along the price for some sorts had been high and the demand active. As regards this crop, the contrast is most striking, as twelve months ago they could scarcely be converted into cash and many of them were given to cattle.

The cereals here and there sown in February were thin in the ground, and growth for weeks at a time during the spring was almost imperceptible. The anticipation of a good crop of hay was abandoned, as only extraordinarily moist and warm weather could have given a fair yield. The lambing of hill flocks was gone on with under unfavorable conditions, and May departed without bringing a May day to the farmers.

In June, in common with other parts of the country, the crops in the border district were unusually backward. Barley and oats, which are the principal cereals grown in the district, were expected to be a light crop. In some localities oats were attacked by grub. Consequent on the probability of a restricted crop, old oats rapidly advanced in price. Pastures were very bare, and, in consequence of the supply of turnips becoming in many cases exhausted, parks were too early stocked with cattle. This, with the cold, dry weather, kept them very short of grass. Despite this sheep have done remarkably well, and lambs especially compare favorably with those of last year, when grass was everywhere abundant. The same remark does not, however, apply to cattle, as they have not improved in condition so rapidly as in seasons when there was a better crop. The price of old hay has gone up considerably, an advance of about 10 cents per 14 pounds being obtained. Potatoes were everywhere looking vigorous and healthy. Turnips, where early sown, considering the dry weather, looked well. Later-sown turnips have been attacked by the "fly," those sown about Whitsunday having suffered most from the insect. This is to be attributed to the spell of cold, dry weather. Cabbages year by year increase as a crop on border farms. This year they have been somewhat "blanky," a large number of young plants succumbing to the drought. Those that took root, however, have done fairly well. Farmers who had sufficient "keep" to enable them to retain their fat stock have been well repaid for their extra keep, as prices have of late advanced rapidly. Beef, since the commencement of April, rose in value quite 36 cents per 14 pounds, and mutton, on an average, has gone up 3 cents per pound.

In July abundant sunshine and moisture induced the rapid growth of cereals and grass, while root crops, though late in starting, grew quickly and without check and presented a remarkably favorable appearance, being as yet exempt from the ravages of the caterpillar, which has been so destructive to the Swedes and yellow turnips on the eastern seaboard. Of the cereals, barley, it is expected, will be the best crop this year. It does not seem to have been so much affected by the cold weather. Oats were "shot" toward the end of the month, but were generally a light crop, especially on the earlier farms, being short in the straw and very thin in the ground, many of the plants having perished during the bitterly cold weather in spring. Turnips looked well. Potatoes promised an excellent crop. Hay seemed much lighter than usual; it improved much, however, and proved profitable, prices being high. Tares are not largely grown in this district, but where cultivated are a good crop. Pastures have been very bare; but a

marked improvement set in with the July rains, and sheep and lambs were thriving well, the latter being an average crop and very healthy. Had favorable weather continued, general harvest would have been a little earlier than last year, but it was much later. It may be noted that on farms carrying breeding stocks—and such are universal in this district—prospects were in July at least less favorable than they have been of late years, the fall in prices owing to the greatly enhanced cost of spring sheep for sheep stock having materially reduced their margin of profit.

Abrupt changes of the weather, accompanied by several storms since July, overturned many apparently well-founded anticipations on agricultural matters. The hay crop was gathered for the season, and over a circuit of 20 miles from Galashiels the deficiency in bulk is between two-fifths and three-fifths of an average crop. In quality it is held to be also inferior, the crop having been too rapidly rushed to maturity by excess of rain, being thus defective in the nutritive qualities which well-grown hay should possess. Much of it was also considerably bleached after it was cut. In ordinary seasons a good deal is sold by the middle of August, but buyers held off and little business was done.

As regards the cereals, barley is the best crop; but the weather continues dull with too much rain. It was thought the crop would be a fair average as regards bulk, but it is a problem whether the quality may be suitable for malting. Growing even secondary samples in this district for such purpose is risky, and all or most of last year's crop is still in some stock yards. Everyone expected that oats would be extremely short in straw this year, but the moist air and high temperature rushed the crop up to about an average height. Straw is deficient, but possibly the corn gathered will be good, sound stuff, though considerably below an average yield per acre as regards weight.

Fat cattle have been bringing better prices—from 15 to 16 cents per pound. Fat sheep and lambs sold well—best mutton from 16 to 18 cents per pound and ewes from 12 to 15 cents—but the caterpillar scare depressed the price of lambs and sheep for breeding off. At the earlier sales lambs were down 85 cents per head compared with last year, partly, at least, owing to a dread that the turnips would not be abundant. Now, however, prices of lambs and store cattle should rise, and they have done so to a slight extent. The turnip crop all over the district is fair, and as this becomes assured prices of stock should rise.

It is premature to give the result of this year's harvest, as it has been so late; but it may safely be said it is below the average and considerably worse than last year. In one instance a farmer asserts that an area of barley, which, but for the high winds and gusty weather, would probably have yielded $2,500 of a return, only yielded barley a tenth of that sum; but, of course, this is, fortunately, an exceptional instance.

WALLACE BRUCE,

UNITED STATES CONSULATE, *Consul.*

Leith, October 26, 1891.

TRADE AND INDUSTRIES OF GASPÉ BASIN.

REPORT BY CONSUL DICKSON.

THE FISHERIES.

Cod.—This fishery, the main industry of this consular district, has afforded more than an average return this season. A considerable quantity of large fish was sent to Halifax, Montreal, and Quebec markets. The prices paid to fishermen on the coast this season were higher than for a number of years, $4.60 having been the average paid. From $3 to $3.50 is the price generally paid by the merchants here for a number of years past.

Salmon.—This fishery did not yield so large a return as last season, but the prices for fresh salmon ranged higher. About all of this fish is shipped fresh to Fulton Market, New York city; but I am unable to give the amount and the value, as the shippers here take advantage of the hundred-dollar clause as contained in the Department's circular of August 9, 1890, and make all of their shipments just under $100, so as to save the consular certificate.

Mackerel.—This fishery has been a total failure on the Gaspé coast the past season, the same as the last five or six seasons.

PETROLEUM BORINGS.

This work has not made satisfactory progress during the past year. The two borings in Sandy Beach mentioned in my last annual report have been closed almost the whole year; whether abandoned or not it is hard to say, but I should consider them unproductive. A third well has been bored about 3,000 feet and has turned out dry. The fourth boring at Seal Cove, or Tar Point, as it is called from a surface show of oil, has the tools stuck in the hole at over 3,000 feet. The condition of the well, I think, is hopeless. The fifth well, on the York River, about 7 miles from Gaspé village, is down about 3,000 feet; a small show of oil was found in this well at about 2,000 feet. At this writing the tools are in the well, and a fishing job has been going on for some weeks. Still further up the York River, about 15 miles from this village, another rig has been put up, but work has not been commenced. Only two skilled men have been retained. This looks as if only one boring would be carried on during this coming winter.

An expert from England has been sent out to examine the country on behalf of the capitalists who have been advancing money to carry on the exploitations with a view to the formation of a company. These gentlemen hold a mortgage on the lands of the American company of twenty-five years ago, which company was then represented by J. B. Fowles, of Boston, Mass., and at present by James Foley. The report of the expert was for the English capitalists, and its nature has not been made public, except that he is said to have advised that it was no use going greater depths than they have gone, which is about 3,000 feet.

These six borings are under the management of Mr. James Foley, formerly of the Boston Chemical Works, Boston, Mass.

RAILWAYS.

The Bay of Chaleur Railway, that has been under construction so many years in this consular district, has gone into the hands of a new company, who seem to be pressing the work. I think this work will be extended to Paspebiac next summer. Paspebiac is 100 miles from Gaspé Basin, and this will be the most difficult part of the proposed road. It is quite impossible in the present condition of politics in the province of Quebec to predict how it will be about the extension of this railroad from Paspebiac to Gaspé Basin. There is a strong party in the county of Bonaventure who wish to make Paspebiac the terminus, and to build an artificial harbor there instead of extending the road to Gaspé Basin, where there is a splendid harbor. The inhabitants here seem to feel that if oil is struck they will have the railway; if not, it will be years in reaching them, as there does not at present appear to be anything else to lead to the rapid development of this part of the country.

NAVIGATION.

One steam yacht, one fishing schooner, and seven steamers flying the American flag called at this port during the past season.

The last vessel of the season left on the 6th instant; the previous year on the 2d of the same month.

On the 7th of this month the light-ship at Sandy Beach, at the mouth of this harbor, went into winter quarters, and the harbor light was put out.

Navigation opened here last spring on the 2d of May.

EXPORTS TO THE UNITED STATES.

The following table shows the value of declared exports from the consular district of Gaspé Basin to the United States during the year ended September 30, 1891:

Articles.	Quantity.	Value.
Blueberries, canned.....cases...	2,918	$3,822.34
Codfish, dry.....pounds...	1,700	90.00
Cod-liver oil.....barrels...	5	68.75
Dish-washing machine.....package...	1	12.50
Eggs.....dozens...	2,548	231.28
Household goods.....packages...	1	100.00
Oil-well tools.....do.....	4	167.00
Railway sleepers.....pieces...	329,893	33,110.33
Total.....	.....	37,602.20
Total for preceding year.....	.....	51,320.98
Decrease.....	.....	13,718.78

IMPORTS FROM THE UNITED STATES.

The following table shows the imports from the United States to the consular district of Gaspé Basin for the year ended September 30, 1891:

Articles.	Quantity.	Value.
Beef.....barrels...	25	$200
Flour.....do.....	1,000	4,250
Mining machinery.....	.....	3,294
Merchandise.....	.....	433
Pork.....barrels...	164	2,633
Pitch and tar.....do.....	75	150
Seines, nets, lines, and cordage.....packages...	6	1,732
Total.....	.....	12,692
Total for preceding year.....	.....	16,136
Decrease.....	.....	3,444

GENERAL IMPORTS AND EXPORTS.

For the year ended September 30, 1891, the exports of codfish were 43,000 quintals, valued at $215,000. They were shipped to Barbados, (West Indies), Brazil, Italy, Spain, and Jersey (Great Britain), and were shipped by fifteen vessels of from 75 to 200 tons, all under the British flag.

The imports for the same period consisted of general merchandise, nets, lines, and twine, valued at $7,814; and sugar and molasses, valued at $6,504.

TRADE OF PASPEBIAC.

From the consular agency at Paspebiac, in this consular district, for the year ended September 30, 1891, there were exported 50,380 quintals of codfish, valued at $361,710; 1,000 barrels of cod oil, valued at $12,000; 30,000 cedar shingles, valued at $4,500.

The imports were merchandise, molasses, sugar, and salt, valued at $24,450.

ALMAR F. DICKSON,
Consul.

UNITED STATES CONSULATE,
Gaspé Basin, December 16, 1891.

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REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 137.—FEBRUARY, 1892.

ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE.
ALL REQUESTS FOR THESE REPORTS SHOULD BE ADDRESSED TO THE SECRETARY OF STATE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 137.—FEBRUARY, 1892.

LETTERS PATENT IN MALTA.

REPORT BY CONSUL WORTHINGTON.

I have the honor to transmit the following, which was published in the Government Gazette:

[No. 1.]

By his excellency the governor of Malta and its dependencies:

Whereas Mr. G. G. M. Hardingham, C. E., agent of Alexander Schanschieff, of Clifton Villa, the Avenue, upper Norwood, county of Surrey, and Michael John Paul, 18 Montague Place, Russell Square, Middlesex, has represented to us that by letters patent No. 15777, dated the 1st of November, 1888, a grant has been made to the said Schanschieff and Paul, conferring upon them the special license, full powers, sole privilege, and authority that they, the said patentees, by themselves, their agents, or licensees, and no others, may, at all times after the date of the letters patent aforesaid and during the term therein set forth, make use of, exercise, and vend within the United Kingdom the invention of which, according to the declaration in the said letters patent, the said patentees are in possession, namely, an apparatus to facilitate the coaling of ships and the conveyance of coal from ships to wharfs and other places;

And whereas the said G. G. M. Hardingham, C. E., has filed a specification of the said invention, with a declaration that he is the authorized agent of the said inventors and a description of the nature of the said invention, and of the particular inventions therein which are claimed by them as new and for which they apply for a patent;

We now, by virtue of the powers vested in us by ordinance No. XIII of 1889, and on the conditions therein set forth, do by these presents give and grant unto the said Alexander Schanschieff and Michael John Paul the exclusive right to manufacture, make use of, exercise, and vend the said invention within the island of Malta and its dependencies in such manner as to them may seem meet, for any unexpired term of the original concession granted by the said letters patent of November 1, 1888.

Provided, that this our warrant is held on the condition that, if at any time during the said term it will be made to appear to us that this our grant is contrary to law, or it should be proved before the competent civil court that the said invention had been previously made publicly known in these islands or elsewhere before the grant of a patent in such countries wherein an exclusive privilege for the same has been granted, or that they, the said patentees,

are not the first inventors, this our warrant shall forthwith be determined and be void to all intents and purposes; provided, also, that they, the said patentees, may be required to assign their grant, or to transfer the use thereof for a consideration to be adjudicated by the competent civil court, if the aforesaid invention shall not have been put into action within twelve months subsequent to this day, or if its working shall have been suspended for twelve months continuously. And, lastly, we do reserve to the governor of Malta for the time being the power to withdraw and cancel this patent by a notice to be published in the Government Gazette whenever there should appear to him to be sufficient reasons for so doing.

Given at the Palace of Valletta, in the island of Malta, this 10th day of September, in the year of our Lord one thousand eight hundred and ninety-one.

[SEAL.] HALES WILKIE,
Deputy Governor.

By command:
G. STRICKLAND,
Chief Secretary to Government.

This is the first patent ever issued by the Malta Government, and the fact may be of interest to American patentees.

JOHN WORTHINGTON,
Consul.

UNITED STATES CONSULATE,
Malta, November 25, 1891.

COMMERCE AND PRODUCTS OF BRITISH COLUMBIA.

REPORT BY CONSUL MYERS, OF VICTORIA.

The province of British Columbia contains a white population of about 92,000. The surface of the entire country is mountainous, rocky, and covered with forests of firs. Only occasionally are the valleys and plateaus of comparatively level land, and the development of agriculture and of manufactures has been slow and unimportant. The attention of the people has been directed mainly to gold, silver, and coal mining, to the production of lumber, and to the salmon and seal fisheries. A large business has been transacted in general furs, and some little is done in deep-sea fishing; but the latter industry is yet in its infancy. Mechanical arts and shipbuilding have received a large amount of attention, and the province is well developed in these respects. These and kindred topics will be discussed in detail in following reports. At present the object is to show the general business of the province with the outside world, how much of it goes to the United States, how much to Great Britain, how much to other countries, and what articles are mainly handled and their value. Tables of imports and exports have been compiled by the Dominion Government for the whole of Canada and by the board of trade of Victoria for the province; but no attempt has been made to give such details as are embraced in the following tables, and the facts in them have only been gathered by patient research.

The trade of the province is mainly with Great Britain and the United States, and up to 1888 the imports exceeded the exports by one-third to

one-fourth of the entire business. In that year, however, the exports exceeded the imports, and this has been repeated each year since. For the fiscal years ended June 30 the figures were as follows:

Year.	Imports.	Exports.
1886	$4,011,726	$2,953,616
1887	3,626,139	3,478,270
1888	3,404,209	3,923,077
1889	3,809,786	4,334,306
1890	4,387,486	5,636,725

This reversal of trade statistics was brought about mainly by the development of the coal and mining and lumber industries and the enlargement of the salmon and seal fisheries.

IMPORTS.

British Columbia imports nearly all its breadstuffs from the United States and a large proportion of its cured meats; the latter from Chicago, Ill., and Cedar Rapids, Iowa. Breadstuffs come principally from the States of Washington and Oregon and fruits from Oregon and California. Cattle, swine, and sheep are imported from Washington and Oregon in large numbers, and furnish nearly all the fresh meats for this city and Vancouver Island, also a very large proportion of that consumed on the mainland.

Other chief imports from the United States are beer, baking powder, books and periodicals, biscuits, bran, wheat, flour, road vehicles, coffee, cotton goods, drugs and chemicals, earthen and china ware, eggs, furs and skins from Alaska, apples, oranges and lemons, gunpowder and other explosives, boots and shoes, hardware, small machines (such as typewriters and sewing machines), steel manufactures, rubber goods, malt, mineral and other oils, paper and its manufactures, seines, spirits and wines, sugar and sirups, teas, telephones and telegraphs, tinware, tobacco, vegetables, and manufactures of wood.

The chief articles of import from Great Britain are ale, beer, and porter; supplies for the Government, army, and navy; manufactures of cotton, flax, and hemp; glassware, iron, tin, lead, spirits and wines, salt, seines, laces and millinery, and wooden goods.

Rice is imported from China and Siam in considerable quantities, teas from China and Japan, and fancy wines from France.

The figures given in the table following are for the fiscal year ended June 30, 1890. It would have been interesting to have given the figures for the fiscal year ended June 30, 1891, also, as they would have shown the effect on trade, if any, of the new tariff law; but the report for that period has not yet been given to the public by the Dominion Government, and will not be until the sitting of Parliament. Comparison must therefore be reserved for a later report.

Table showing the imports into the province of British Columbia for the fiscal year ended June 30, 1890.

Articles.	From—			Total.
	United States.	Great Britain.	Other countries.	
Ale, beer, and porter	$23,425	$26,652	$929	$50,996
Animals, live:				
Cattle	19,907			19,907
Horses	31,132			31,132
Sheep	73,588			73,588
Hogs	17,108	20		17,128
All other animals	2,701	22		2,723
Articles for Government, army, and navy	6,209	144,735		150,944
Baking powder	30,332			30,332
Bells	434	1,237		1,671
Books, periodicals, and pamphlets	37,362	6,771	220	44,353
Bookbinders' tools	1,125			1,125
Braces and suspenders	448	721		1,169
Brass, manufactures of	9,949	1,596	1,445	13,090
Breadstuffs:				
Bread and biscuit	15,489	572		16,061
Beans	7,066		363	7,429
Bran	58,421			58,421
Oatmeal	5,441	53		5,494
Rice	1,224		93,842	95,066
Wheat	17,528			17,528
Wheat flour	130,894			130,894
All other breadstuffs	25,673	706	4,763	29,142
Bricks, tiles, and sewer pipe	7,144	3,482	223	10,849
Brushes	2,070	504	286	2,860
Buttons	679	2,535	238	3,452
Candles, tallow and sperm	2,789	4,716	33	7,538
Carriages, wagons, etc	15,893	1,294		16,187
Cement	11,095	3,215	1,785	16,095
Cider, clarified and refined	1,413	72		1,485
Clocks	3,012	401	58	3,471
Coal	8,228	534		8,752
Coke	836	728		1,564
Cocoa paste and chocolate	1,809	3,633		5,442
Coffee and imitations thereof	39,462	521	3,372	43,355
Coins, gold and siver	10	10,000		10,010
Copper, manufactures of	3,516	1,745	950	6,211
Cordage	5,156	156		5,312
Cork wood, manufactures of	1,892	81		1,973
Cotton, manufactures of:				
Denims, cotton flannels, etc	14,585	2,885		17,470
Prints	296	16,235	229	16,750
Clothing	7,570	13,030	1,343	21,943
All other manufactures	6,320	24,731	908	31,969
Diamonds and precious stones	3,022	752		3,774
Drugs and chemicals	27,510	8,820	1,746	38,076
Earthenware and china	14,057	10,292	6,017	30,366
Eggs	40,832		1,440	42,272
Embroideries	44	1,464	1,197	2,715
Fancy goods	4,393	7,268	2,525	14,226
Furs and skins, undressed	53,535			53,535
Fireworks	813		1,706	2,519
Fish, sea, fresh and prepared	5,535	502	2,252	8,289
Flax and hemp, manufactures of	1,988	12,988	74	14,950

Table showing the imports into the province of British Columbia, etc.—Continued.

Articles.	From—			Total.
	United States.	Great Britain.	Other countries.	
Fruits, green and prepared:				
Apples	$21,463	.....	.....	$21,463
Cherries	5,466	.....	.....	5,466
Grapes	14,497	$492	.....	14,989
Oranges and lemons	42,245	10,513	$12,385	65,143
Raisins	5,113	155	.....	5,268
All other fruits	47,093	1,536	3,065	51,694
Furs, manufactured	494	4,093	40	4,627
Glass, manufactures of	17,950	14,864	3,014	35,828
Gloves	721	8,151	623	9,495
Gold and silver, manufactures of	4,499	1,374	106	5,979
Grease, axle	1,438	.....	.....	1,438
Gunpowder and other explosives	14,283	10,735	1	25,019
Gutta-percha and India-rubber manufactures:				
Boots and shoes	43,121	679	.....	43,800
Clothing	2,304	4,109	732	7,145
All other manufactures	11,672	1,192	.....	12,864
Hair and manufactures thereof	901	151	36	1,088
Hats, caps, and bonnets	16,997	11,507	99	28,603
Honey	2,411	37	4	2,452
Hops	2,068	.....	106	2,174
Ink:				
Writing	425	156	29	608
Printing	2,668	16	.....	2,684
Iron and steel, manufactures of:				
Agricultural implements	9,210	95	.....	9,305
Bar iron	10,099	16,594	.....	26,693
Cast iron	15,343	16,224	.....	31,567
Engines	3,022	5,630	.....	8,652
Hardware, house furnishings, etc	31,833	4,264	.....	36,097
Pig and scrap iron	2,275	8,489	.....	10,764
Machines (typewriters, sewing machines, etc.)	100,766	2,958	.....	103,724
Railroad iron	3,828	23,482	.....	27,310
Piping	18,921	8,812	.....	27,733
Wire	16,311	4,283	538	21,132
All other steel manufactures	60,362	21,010	.....	81,372
All other iron manufactures	76,202	11,771	.....	87,973
Jellies, jams, etc	335	1,807	.....	2,142
Jewelry	3,356	610	294	4,260
Junk	1,476	1,126	.....	2,602
Laces and millinery	4,564	12,380	1,724	18,768
Lead, manufactures of	9,044	10,466	74	19,584
Leather, manufactures of:				
Boots and shoes	28,362	6,835	5,015	40,212
Harness	4,917	473	.....	5,410
All other manufactures	11,709	781	7,205	19,605
Lumber	11,788	.....	.....	11,788
Malt	29,215	.....	.....	29,215
Marble and manufactures thereof	4,974	12	70	5,056
Mats and rugs	1,011	2,355	3,142	6,508
Metals, manufactures of, not otherwise specified	20,651	4,331	1,126	26,104
Mineral and aërated waters	1,236	2,522	.....	3,758
Musical instruments	6,231	1,330	2,090	9,651
Mustard	141	2,074	.....	2,215
Oils:				
Mineral	66,050	.....	.....	66,050
Other than mineral	21,481	3,814	10,065	35,360

Table showing the imports into the province of British Columbia, etc.—Continued.

Articles.	From— United States.	From— Great Britain.	From— Other countries.	Total.
Oil cake, meal, etc	$3,496	.....	.....	$3,496
Oilcloth	3,381	$4,102	.....	7,483
Optical instruments, etc	356	114	.....	477
Oysters, lobsters	9,556	1,098	$1,514	12,168
Packages, not otherwise specified	47,486	19,102	4,481	71,069
Paintings and drawings	3,626	521	146	4,293
Paints and colors	4,170	6,148	12	10,330
Paper and manufactures thereof	25,776	4,828	3,474	30,078
Pencils	778	241	3	1,021
Pickles	1,448	3,676	323	5,447
Plants, trees, and shrubs	6,012	108	107	6,229
Post-office parcels	13,257	7,245	.....	20,502
Printing presses	4,231	25	.....	4,256
Provisions:				
Butter	36,160	.....	.....	36,160
Lard	32,173	.....	.....	32,173
Meats	156,264	328	1,444	158,036
All other provisions	14,411	2,532	726	17,668
Salt	5,599	13,839	2,110	21,538
Sauces and catchups	948	4,503	643	6,094
Seeds	6,346	461	283	7,089
Seines	59,152	31,187	.....	90,339
Settlers' effects	81,137	30,432	1,182	112,751
Ships and other vessels	12,302	.....	.....	12,302
Ships' boilers and repairs	4,810	.....	.....	4,810
Silk manufactures	5,080	42,121	17,586	64,787
Soaps	3,282	1,388	113	4,783
Spices	1,783	577	551	2,911
Spirits and wines	29,006	108,241	21,402	158,649
Stone and manufactures thereof	2,706	203	.....	2,909
Sugars and sirups	26,971	4,778	3,105	34,954
Teas	25,532	1,705	76,129	103,366
Telephones and telegraph instruments	43,582	21	.....	43,602
Tin and manufactures thereof	79,947	167,981	8,794	256,722
Tobacco	52,970	4,312	3,778	61,060
Turpentine, spirits of	4,250	.....	.....	4,250
Trunks and valises	711	1,307	118	2,156
Twine of all kinds	2,039	426	5	2,470
Umbrellas and parasols	446	7,903	625	8,974
Unenumerated articles	21,261	5,097	2,375	28,733
Varnishes and lacquers	5,371	254	14	5,639
Vegetables, fresh and prepared	33,310	732	4,578	38,620
Vinegar	2,032	657	61	2,750
Watches	2,792	182	700	3,674
Wood, manufactures of	40,016	6,214	5,054	51,384
Willow, manufactures of	502	368	1,358	2,228
Woolen manufactures:				
Blankets	433	7,255	.....	7,688
Cloths and coatings	160	17,411	331	17,902
Flannels and shawls	3,372	21,310	787	24,469
Hosiery, shirts, and underwear	391	25,152	2,080	27,623
Clothing	2,907	34,833	1,443	39,183
Carpets and tapestry	1,902	12,519	182	14,603
All other woolens	2,978	29,376	1,989	34,343
Zinc	1,460	1,120	.....	2,580

EXPORTS.

The principal exports are canned salmon, coal, lumber, seal skins, furs, gold-bearing quartz, gold dust, and bullion.

For the year ended June 30, 1890, the amount of canned salmon shipped to Great Britain was 16,671,729 pounds, valued at $1,923,271. For the same period shipments were made to other countries as follows: United States, 462,684 pounds; Argentine Republic, 16,800 pounds; Australia, 662,400 pounds; China, 38,505 pounds; Chile, 47,370 pounds; and Japan, 10,080 pounds.

For the same fiscal year the export of coal amounted to 500,534 tons, of which 494,301 tons went to San Francisco and points in the southwest. Other shipments were as follows: Hongkong, 1,855 tons; Japan, 1,800 tons; Sandwich Islands, 2,578 tons. The coal mines are located on Vancouver Island and are practically inexhaustible in quantity, and the quality is superior to any other yet discovered in the vicinity of Puget Sound.

The lumber industry is yet in its infancy, a large proportion of the mills now in operation being owned by citizens of the United States. Australia, Chile, Peru, and China are the principal markets for this product. The total lumber shipments for the fiscal year ended June 30, 1890, were valued at $317,951. This includes only the boards exported; it does not include lumber consumed at home or timber exported for spars, etc. It is expected that the figures for 1891 will show a large increase, but these are not at present available.

The seal skins exported are about evenly divided between Great Britain and the United States. The total value for the year indicated was $290,376. Of other furs—bear, mink, wolf, fox, deer—the total value was $246,242, the proportion going to the United States being valued at $215,178.

The entire shipments of gold dust, gold-bearing quartz, and nuggets go to the United States, and for the period named were valued at $375,964. For 1886 the value of these products shipped to the United States was $746,690, and there has been a decrease of about $75,000 each year since. All bullion exported goes to the United States.

Manufactures of clothing, liquors, musical instruments, etc., that are exported are not, as a rule, the product of the province, but are imported from some other country and then exported.

Table showing the exports from British Columbia for the fiscal year ended June 30, 1890.

Articles.	To—			Total.
	United States.	Great Britain.	Other countries.	
Biscuits and bread	$472	.....	.....	$472
Books and pamphlets	2,092	.....	$200	2,292
Boats	200	.....	900	1,100
Brick	1,050	.....	.....	1,050
Butter	97	.....	1,492	1,590
Carriages, carts, etc	612	.....	.....	612

Table showing the exports from British Columbia, etc.—Continued.

Articles.	To—			Total.
	United States.	Great Britain.	Other countries.	
Cheese	$262	.....	$681	$943
Clothing and wearing apparel	16,973	$239	500	17,702
Coin and bullion	126,742	.....	.....	126,742
Cotton manufactures	130	.....	.....	130
Coal	1,953,231	.....	24,766	1,977,997
Drugs, chemicals, etc	58	.....	.....	58
Electrotypes	134	.....	.....	134
Fish, salted	1,576	.....	86	1,651
Furs, undressed	215,178	31,064	.....	246,242
Fruits	129	.....	204	333
Gold-bearing quartz, nuggets, etc	375,964	500	.....	376,464
Grain and products thereof	1,228	.....	336	1,564
Glass and glassware	2,088	.....	.....	2,088
Horses	575	.....	.....	575
Hair	50	.....	.....	50
Hides, horns, and skins	95,061	150	.....	95,211
Hay	6,513	.....	103	6,518
Hats and caps	110	.....	.....	110
Household effects	51,755	800	2,679	55,234
Hardware	6,862	.....	59	6,921
Iron ore	9,150	.....	.....	9,150
Iron:				
Manufactures of	7,612	60	112	7,784
Scrap	8,891	.....	.....	8,891
Ice	116	.....	.....	116
Junk and oakum	557	.....	.....	557
Logs	1,950	.....	.....	1,950
Lumber	14,508	18,928	284,515	317,951
Lamps and lanterns	300	.....	.....	300
Leather, manufactures of	107	.....	.....	107
Lime	2,223	.....	.....	2,223
Liquors	2,895	10	113	3,018
Masts and spars	.....	5,314	456	5,770
Malt	226	.....	.....	226
Meats	1,753	.....	15	1,788
Metals other than iron	398	.....	614	1,012
Musical instruments	3,607	.....	100	3,707
Miscellaneous articles	19,539	9	2,927	22,475
Manufactures not elsewhere enumerated	38,290	89	250	38,429
Rags	50	.....	.....	50
Rice, cleaned	518	.....	.....	518
Salmon:				
Fresh and smoked	3,379	50	.....	3,429
Canned	61,733	1,903,271	82,094	2,067,098
Pickled	7,097	906	3,553	11,556
Seal skins	171,474	118,922	.....	290,396
Seeds	78	.....	.....	78
Silver ore	3,764	.....	.....	3,764
Stone, plain and ornamental	7,752	.....	.....	7,752
Steel, manufactures of	1,005	.....	125	1,130
Tar	161	.....	49	210
Teas	222	.....	.....	222
Tobacco, leaf	3,560	.....	.....	3,560
Trees, shrubs, and plants	79	.....	.....	79
Vegetables, canned and fresh	1,364	.....	225	1,589
Wood, manufactures of	637	230	15	892
Wool	15	20	25	30
Woolen manufactures	636	204	6	746

COMPARISON OF TRADE.

The following table will show the aggregates of imports and exports for five years, commencing with the fiscal year ended June 30, 1886. The trade with the United States has been reliable and of gradual increase, while that of Great Britain has fluctuated. The great increase of exports to Great Britain for the fiscal year 1890 was caused by the greatly increased salmon pack, which in 1888 amounted to 184,000 cases and was increased in 1889 to 414,294 cases.

Table showing the imports and exports of British Columbia for the years 1886-'90.

IMPORTS.

Countries.	1886.	1887.	1888.	1889.	1890.
Great Britain	$1,243,329	$793,434	$837,170	$970,139	$1,211,658
United States	2,253,442	2,059,035	2,042,927	2,321,954	2,559,426
France	12,148	9,769	8,614	9,256	20,707
Germany	3,180	2,512	5,550	20,847	17,353
China	451,405	663,727	420,435	396,076	445,508
Japan	12,477	53,819	42,213	60,744	72,697
Holland	223	29	.....	.....	2,942
Spanish possessions	9,486	10,073	4,990	4,271	7,376
Austria	304	450	105	2,108	718
Siam	19,168	55,172	25,044	21,165	43,144
Belgium	197	.....	4,280	1,359	200
Portugal	.....	127	555	.....	144
Australia	2,070	1,970	7,556	291	11,430
Switzerland	.....	329	.....	163	1,880
Mexico	.....	.....	.....	77	65
Norway and Sweden	348	5	382	3,349	30
Sandwich Islands	125	300	1,299	51	62
British East Indies	.....	.....	5	418	227
Dutch East Indies	.....	.....	.....	514	3,159
New Zealand	5	750	700	.....	10
Italy	200	146	65	.....	.....
Chile	.....	.....	2,572	.....	.....
Central America	2,819	4,492	145	.....	.....
Total	4,011,726	3,626,139	3,404,209	3,809,786	4,387,486

EXPORTS.

Great Britain	650,039	812,787	1,038,787	873,425	2,103,266
United States	2,062,355	2,328,764	2,287,055	2,819,185	3,225,176
Germany	136	1,000	.....	2,812	12
Argentine Republic	.....	.....	.....	1,860	2,030
Australia	148,123	160,676	300,693	423,663	178,099
China	55,415	38,879	75,911	63,697	34,334
Chile	11,723	33,828	109,692	70,243	111,660
Hongkong	.....	.....	128	.....	7,254
Japan	.....	28,078	47,480	8,599	18,039
Mexico	1,500	875	33,599	15,003	90
Peru	6,064	38,073	16,994	31,113	36,435
Sandwich Islands	13,197	33,113	10,473	17,735	12,935
Samoan Islands	.....	.....	.....	.....	7,465
Uruguay	.....	.....	.....	6,972	.....
British Africa	.....	.....	500	.....	.....
French possessions	.....	.....	9,787	.....	.....
Belgium	.....	2,307	.....	.....	.....
Siberia	5,064	.....	.....	.....	.....
Total	2,953,616	3,478,270	3,923,077	4,334,306	5,636,725

PRINCIPAL PORTS.

The following table shows the business of the four principal ports of the province for the years indicated:

Ports.	1888.		1889.		1890.	
	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.
Nanaimo	$1,240,393	$188,678	$1,851,419	$301,016	$1,934,544	$233,391
New Westminster	11,206	117,974	36,394	155,549	201,749	255,055
Vancouver	553,539	480,900	518,562	443,759	483,685	697,600
Victoria	2,122,939	2,922,399	1,927,931	2,862,803	3,143,289	3,193,226
Total	3,928,077	3,509,951	4,334,306	3,763,127	5,763,467	4,379,272

The exports from Nanaimo are coal and the imports articles of food, clothing, etc. The exports from New Westminster are lumber and salmon from the Frazer River canneries; the imports are similar to those of Nanaimo. The exports from Vancouver are lumber. That city is the western terminus of the Canadian Pacific Railway and is the point of transfer of that company's immense business with the Orient. Quite a wholesaling and jobbing business is done with the mainland from that city, and the imports embrace the products of all countries. The business of Victoria is general. It is the principal point of collection and distribution for both exports and imports. Most of the vessels from Great Britain discharge their cargoes at this place; here, also, is gathered the bulk of the salmon pack, the product of the seal catches, and the general fur business. The above table shows that more than half of the business of the entire province is transacted through the port of Victoria.

Most of the American products imported are delivered directly in the province by American transportation lines, and many products from other countries, and even from Great Britain, are delivered here by American companies. The fruits and wines of California are brought to Victoria from San Francisco by steamer, and from here distributed by local steamers and rail. Dressed meat, live stock, grain, flour, and a large proportion of manufactures are brought over the Northen Pacific Railway and transferred on steamers at Seattle and Tacoma and brought to this port. In the Kootenay mining district, in eastern British Columbia, most of the imports from the United States are brought from Spokane Falls, Wash. The Canadian Pacific Railway also transports many products and manufactures of the Eastern States, as well as a large proportion of the trade from Great Britain to the province. Prior to the completion of the Canadian Pacific and Northern Pacific railways, the trade of the province and its source of supplies was entirely by vessels from San Francisco and around Cape Horn from Great Britain. A proportion of business still goes that way; but the railroads have captured a large part of this trade, which seems to be gaining in their favor.

A goodly proportion of the business men of the province are citizens of the United States, and the number of Americans in British Columbia in-

creases yearly. The fur business is almost wholly in the hands of Americans, and the lumber and mining industries are very largely controlled by American capital. Americans supply the bulk of the imports and will probably continue to do so; in fact, our business is increasing rather than diminishing. The proximity of the province to the United States makes American commercial men numerous, and business interests in all lines are closely watched by them.

LEVI N. MYERS,
Consul.

UNITED STATES CONSULATE,
Victoria, December 12, 1891.

LABOR IN GENEVA.

REPORT BY CONSUL HEMMICK.

The information herein refers particularly to French Switzerland.

WATCHMAKERS.

A difference must be made between the workmen in Geneva and the workmen who live in the mountain towns of Neufchâtel, Locle, Chaux-de-Fonds, Bienne, St. Imier, etc.

In Geneva the workmen get much larger wages than other watchmakers, as they are the very best in their trade. Some are paid by the month and make from $27 to $29. There are others the greater number of whom work by the piece; they are specialists and very clever in their branch of work. These men make more when regularly occupied, which is not always the case, and they make as much as $96 per month. The regulators are especially well paid.

In the mountains the workmen who are paid by the month get from $17.40 to $34.75. The specialists working by the piece make, in proportion to their skill, $29 and up to $50 per month and even more. In the factories the workmen put in about ten hours' labor, on an average, per day. The specialists, who, as a rule, work at home or in private workshops, are free as regards the number of working hours; but generally they do not work more than ten hours, and many consider eight to nine hours a good day's work.

JEWELERS.

These are seldom hired by the month, and very few work by the piece, that is to say, undertaking a certain piece of work for a fixed price. Most of them work by the hour, for which they get 10 to 15 cents.

There are only a few of them who have regular employment of a certain number of hours a day. A good workman with an average of nine or ten hours a day makes from $1.15 to $1.35.

Good engravers, chasers, and painters on enamel (who are often more artists than workmen) often make much more. I know some who make $965 to $1,500 a year.

Watchmaking and jewelry are not in as good a state or condition as before the strike of 1867. The ordinary cheap article of trade is no longer made. On the other hand, there are in Geneva a good many genuine artists who produce rich jewelry, miniature watches, beautiful enamels, etc. In this respect there are very few places that can be compared to Geneva.

CARPENTERS, JOINERS, MASONS, ETC.

These workmen generally work by the hour (ten hours a day), for which they get from 10 to 12 cents. When they are hired by the piece, the price is fixed so they can make 96 cents to $1.35 per day. In all these trades there are unions of workmen and employers, who fix prices and avoid difficulties and strikes, which, however, have broken out occasionally.

PLUMBERS, LOCKSMITHS, ETC.

Men in these trades get about the same wages. There are, however, a certain number of workmen who make more. I know of some who get from $1.35 to $1.54 per day.

TAILORS.

These are divided into two classes. In establishments where they make to order workmen are paid by the piece and make from $11.58 to $13.50 a week. To get a clear idea of his profit one must take into account that he is not regularly employed. Good judges give as their opinion that this class of workmen can not be sure of more than ten months' work per year, or even less. A large number work for ready-made clothing establishments and only get from 58 to 77 cents per day, working from twelve to fourteen hours. A loss of work for a few weeks or an illness of any length of time brings them to want and misery. Almost all the tailors here work at home, and only the cutters and fitters work at the establishments of their employers.

SHOEMAKERS.

As is the case with tailors, these workmen are paid by the piece, but as a rule make less than tailors. A good shoemaker earns from 77 to 96 cents per day by constant labor of twelve to thirteen hours.

BUTCHERS AND BAKERS.

These workmen are hired by the month, their board being paid by the employer, who also pays for part of their washing. They work from twelve to fifteen hours per day and make from $4.80 to $7.72 per month. There are a few first-class workmen who get as much as $9.75 to $11.58 per month.

CLERKS.

These are generally very poorly paid, as there are so many volunteers who serve three years for nothing to gain the experience. A clerk gets from $232

to $482 per year. Of course, head clerks, such as cashiers, bookkeepers, etc., are a little better paid, but they are the exceptions.

LABORERS AND FARM HANDS.

These men are paid by the day or for a certain season, such as the vintage or harvesting season. They make from 58 to 68 cents per day. If their meals are furnished them, they get 24 cents per day. In summer they work from 5 o'clock in the morning until 7 or 8 o'clock in the evening, with two hours' rest for meals. At a long distance from the larger cities they get even less.

ESTATE RETURNS.

A good estate in this country brings a return of 2½ to 3 per cent on the value to the owner and 1½ to 2 per cent to the farmer.

ROLAND J. HEMMICK,
Consul.

UNITED STATES CONSULATE,
Geneva, November 30, 1891.

PLATE-GLASS MANUFACTURE IN BELGIUM.

REPORT BY CONSUL ROOSEVELT, OF BRUSSELS.

According to the latest published statistics (1888), there were in active operation in the Kingdom of Belgium sixty-four factories and one hundred and fifty-three furnaces manufacturing glass of all kinds, employing 17,240 workmen. The value of the yearly production was 35,765,000 francs.

In the consular district of Brussels there are eight plate-glass manufactories, as follows: Société Anonyme of Floreffe, at Floreffe; Société Anonyme of Monstier, sur Sambre; Société Anonyme of Anvelais, sur Sambre; Société Anonyme of St. Roch, at Anvelais; Société Anonyme of St. Marie d'Oigines, at Tamines; Société Anonyme of Hainaut, at Roux; Société Anonyme of Charleroi, at Roux; Société Anonyme of Courcelles, at Courcelles.

The average monthly production of each manufactory is 12,000 square meters. The average monthly production of the eight manufactories is 100,000 square meters; and, per year, 1,200,000 square meters, or 12,000,000 square feet, English measurement.

The total value of plate and window glass exported to the United States from this consular district from January 1, 1890, to September 30, 1891, was $3,647,848.21, as follows: In 1890, $2,204,835.64; first nine months of 1891, $1,443,012.57.

Crystal and mirror plate glass is not manufactured in this consular district, but is largely imported from Fürth, Germany.

Ninety per cent of the crystal and mirror glass is made from blown window glass, which is first made into thick cylinders, which are smoothed and polished by machinery until the desired thickness is obtained, which varies from one-eighth to three-sixteenths of an inch,

The method employed in this district for grinding, smoothing, and polishing plate glass is as follows:

The glass, when taken from the furnace, is spread upon a cast-iron table; the mass is then rolled into sheets of from 9 to 10 and from 14 to 16 millimeters in thickness. The former is designated as thin, and the latter as thick, plate glass. This operation constitutes what is known as rolling, and the glass thus produced is called rough glass. After the glass has been completely cooled, it is placed upon cast-iron tables, upon which a bed of plaster of Paris has been prepared to receive and firmly hold the glass in place. Particular care is exercised in filling in the spaces between the glass and the table with the plaster, so as to securely seal the glass to the table. It then passes through a series of grinding and smoothing until the thickness is reduced to about one-fourth and the face of the glass has been thoroughly polished. It is removed from the table, turned, replaced, and polished in the same manner as above described.

The operation of smoothing and polishing costs 6.50 francs ($1.25) per square meter. The cost of the rough glass is 7.50 francs ($1.45) per square meter. The total cost of glass when finished to a marketable condition is 14 francs ($2.70) per square meter (10¾ English feet).

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Brussels, November 25, 1891.

PENSIONS FOR FRENCH WORKINGMEN.

REPORT BY COMMERCIAL AGENT LOOMIS, OF ST. ETIENNE.

A most interesting and novel scheme relating to that great social problem known as the labor question is soon to be discussed and passed upon by the French Parliament. This projected step toward the happy adjustment of current differences between capital and labor is the establishment by national law of a system of pensions for workingmen.

The German Reichstag has already passed a law creating a pension for German laborers who may reach the age of 70. The annual pension provided by the German law ranges from $18 to $42 per annum, according to the investment of the recipient. One-third of the capital necessary to produce this pension is supplied by the workman in the form of a daily saving of 1 or 2 cents from his wages, one-third is contributed by the employer, and the remaining third by the State.

The law proposed by the French Government is more liberal in its provisions for the comfort of work people in their old age. The minimum pension proposed is $60 per annum, while the maximum is double that amount, or $120. The age at which the pension is available is reduced to 55 years. The Government proposes to furnish two-thirds of the pension,

while the remaining third is to be paid from the investments of the laborer and his employer, which shall be made daily during a period of thirty years.

In Germany the law compels workmen to participate in the pension scheme. In France the participation, so far as labor is concerned, is a matter of choice with the individual workman. It is the employer alone who has no voice in the matter. If the workman decides to avail himself of the opportunity to secure an annuity for himself after his fifty-fifth year, the employer will be forced to contribute one-sixth of the capital necessary to pay the employé an annual income of $60 or $120 a year.

The proposed French law rests on this financial basis: It supposes the workman to labor two hundred and ninety days each year and to make a daily saving of 1 or 2 cents for his personal contribution toward the desired annuity. The employer, of course, pays much more. At the end of thirty years these sums, capitalized at 4 per cent, will give the workingman an annual pension of $36 to $72. The State, by contributing its two-thirds, will raise these amounts to $60 and $120, respectively.

The success of this law from a financial point of view seems to rest on the ability to lend the combined daily savings of the employer and employé made for this purpose at 4 per cent. The difficulty will be to get so high a rate of interest. Neither French *rentes* nor real estate securities pay 4 per cent. The Government must make good the difference.

In the course of twenty years the sums put into the hands of the Government by the workingmen for investment would be enormous. All classes of honest labor would hasten to avail themselves of the law and to profit by it. How, then, could the State employ the millions of dollars that would be rolling into its coffers in such a way as to produce the necessary interest? I can see no promise of safe investment for such large sums at a rate so high as 4 per cent. The material development of Europe is largely achieved. There are no great railway lines to build, no important tunnels to dig, no large and expensive bridges to construct, no long and costly canals to cut, and no great navies or lines of steamships to create and equip. All these things have been done, and further expansion in known and given lines will be gradual, and not attended by vast outlays of money. South American investments are not taken into consideration in the discussion of this question, as they are believed to be too risky. The rate of interest already shows signs of a decline toward 2 or 2½ per cent, a rate which is believed by most European economists to be the normal and permanent one.

It is difficult to estimate the magnitude of the sum which this law will put into the hands of the Government for investment after it has been in operation twenty or thirty years. It is said by the projectors of the law that the total sum will be $300,000,000. Other authorities equally good say the total sum, when the law is fairly in operation, will in less than twenty years amount to $600,000,000, a figure representing half the value of all the cultivated lands in France.

The ultimate dangers of the law seem to be very great from a financial point of view. Then, of course, there are the subsidiary questions concerning the application of the law in a practical way, such as the expense of collecting the investments of the workmen and the cost of maintaining the enormous system of bookkeeping that will be required. And, finally, the statesmen and political economists hostile to the law make the objection that it will not be a panacea for the ills and evils which arise from the struggle between capital and labor. The argument of the thinkers in opposition to the law on this point is that there will be hundreds and even thousands of dissolute, idle, shiftless, and drunken workmen who can not or will not avail themselves of the privileges of the law. They either will not or can not make the daily sacrifice which the small savings called for demands; consequently there will remain the discontented, grumbling, disorderly class of workmen, who will continue to make trouble, foster strikes, and create class hatreds. The industrious workman of sober mind and habits is peaceful and contented, for the most part, at the present time. It is the restless, improvident spirit, having nothing to lose and everything to gain, who changes his habitation two or three times a year, who is the real agitator and promoter of most of the current difficulties between capital and labor.

A special commission has been appointed to consider and report amendments to the proposed law establishing pensions for working people. It will commence active work early in 1892, and its proceedings and the subsequent debates in Parliament will be observed with unaffected interest by the people of all civilized nations, who understand the importance and significance of all legislation bearing on the labor question.

FRANCIS B. LOOMIS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
St. Etienne, December 5, 1891.

THE BEET-SUGAR INDUSTRY OF GERMANY.

REPORT BY CONSUL WAMER, OF COLOGNE.

The number of factories in operation in the Rhineland, which embraces this consular district, during the year 1890–'91 was eleven, out of a total of four hundred and one for the whole of Germany during the previous year.

The following shows the working of the sugar-beet industry in Germany during the past two decades. The figures show that the production of raw sugar in Germany rose from 186,442 tons during the year 1871–'72 to a trifle over 1,000,000 tons in the year 1890–'91. In 1871–'72 it took 12 kilograms of beets to produce 1 kilogram of raw sugar, while in 1889–'90 it required only 8.09 kilograms to produce 1 kilogram of raw sugar.

Table showing the statistics of the beet-sugar industry.

Years.	Factories in operation.	Total quantity of beets worked.	Quantity produced by the factories.	Areas upon which the beets worked were raised.	Quantity of beets raised per hectare.
	Number.	*Tons.*	*Tons.*	*Hectares.*	*100 kilos.*
1871–'72	311	2,250,918	1,504,352	73,690	204
1872–'73	324	3,181,551	2,101,301	82,590	254
1873–'74	337	3,598,764	2,420,909	88,877	272
1874–'75	333	2,756,745	1,908,095	92,655	206
1875–'76	332	4,161,284	2,836,307	96,724	293
1876–'77	328	3,550,037	2,490,154	98,725	252
1877–'78	329	4,090,968	2,872,775	104,783	274
1878–'79	324	4,628,748	3,114,030	107,679	289
1879–'80	328	4,805,262	2,850,586	113,003	252
1880–'81	333	6,322,203	3,871,679	118,431	327
1881–'82	343	6,271,948	3,431,754	121,256	283
1882–'83	358	8,747,154	4,448,632	129,262	344
1883–'84	376	8,918,130	4,205,064	140,843	299
1884–'85	408	10,402,688	4,936,246	150,077	329
1885–'86	399	7,070,317	4,199,047	138,869	302
1886–'87	401	8,306,671	4,436,084	147,782	300
1887–'88	391	6,963,961	3,797,652	143,853	264
1888–'89	396	7,896,183	4,209,942	149,411	282
1889–'90	401	9,822,635	5,093,032	155,014	329

Years.	Quantities obtained.		Quantity of raw sugar produced from every 100 kilograms of beets.	Quantity of beets required to produce 1 kilogram of raw sugar.
	Raw sugar of all kinds.	Molasses.		
	Tons.	*Tons.*	*Kilograms.*	*Kilograms.*
1871–'72	186,442	63,892	8.28	12.07
1872–'73	262,551	91,589	8.25	12.12
1873–'74	291,041	105,818	8.25	12.12
1874–'75	256,412	97,603	9.3	10.75
1875–'76	358,048	133,952	8.6	11.62
1876–'77	289,423	111,101	8.15	12.27
1877–'78	378,009	122,813	9.24	10.82
1878–'79	426,155	133,652	9.21	10.86
1879–'80	409,415	131,371	8.52	11.74
1880–'81	555,915	164,984	8.79	11.37
1881–'82	599,722	150,813	9.56	10.46
1882–'83	831,995	196,305	9.51	10.51
1883–'84	940,109	207,978	10.54	9.49
1884–'85	1,123,030	259,700	10.79	9.26
1885–'86	808,105	180,178	11.43	8.75
1886–'87	985,628	215,887	11.37	8.43
1887–'88	910,698	183,037	13.08	7.65
1888–'89	944,505	201,189	11.96	8.36
1889–'90	1,213,689	240,797	12.36	8.09

Table showing results of year 1889–'90 according to states.

States.	Factories in operation.	Total quantity of beets worked.	Quantity produced by the factories.	Areas upon which the beets worked were raised.	Quantity of beets raised per hectare.
	Number.	*Tons.*	*Tons.*	*Hectares.*	*100 kilos.*
East and West Prussia	22	518,301	1,087	41	265
Brandenburg	14	227,646	93,974	2,838	331
Pomerania	8	202,797	41,344	1,259	328
Posen	16	588,478	38,927	1,340	290
Silesia	58	1,316,152	252,278	7,863	321
Saxony and Schwarzburg	128	3,242,408	2,403,794	71,340	337
Schleswig-Holstein	5	63,063	43,754	1,470	298
Hanover	44	1,027,021	749,446	23,343	321
Westphalia	5	123,474	38,217	1,208	316
Hesse-Nassau	4	84,008	57,849	2,046	283
Rhineland	11	416,521	9,050	240	377
Bavaria and Baden	2	53,643	8,053	390	278
Saxony (Kingdom)	3	80,204	57,301	2,175	263
Würtemberg	5	81,429	25,600	805	318
Hessen	3	80,897	44,660	1,289	346
Mecklenburg	6	214,256	145,358	4,759	305
Thuringia, with Allstädt and Oldisleben	5	134,845	68,437	2,223	308
Brunswick	32	687,950	589,425	17,976	328
Anhalt	30	679,542	424,478	12,509	339

States.	Quantities obtained.		Quantity of raw sugar produced from every 100 kilograms of beets.	Quantity of beets required to produce 1 kilogram of raw sugar.
	Raw sugar of all kinds.	Molasses.		
	Tons.	*Tons.*	*Kilograms.*	*Kilograms.*
East and West Prussia	60,004	12,336	11.58	8.64
Brandenburg	27,067	5,805	11.89	8.41
Pomerania	24,168	4,528	11.92	8.39
Posen	75,333	9,768	12.8	7.81
Silesia	158,783	31,139	12.06	8.29
Saxony and Schwarzburg	404,145	83,196	12.46	8.02
Schleswig-Holstein	7,332	1,394	11.63	8.6
Hanover	129,361	26,784	12.6	7.94
Westphalia	14,348	3,460	11.62	8.61
Hesse-Nassau	9,708	2,782	11.56	8.65
Rhineland	50,490	11,094	12.11	8.26
Bavaria and Baden	6,744	1,424	12.57	7.95
Saxony (Kingdom)	9,953	2,113	12.41	8.06
Würtemberg	9,386	2,467	11.53	8.66
Hessen	10,073	2,435	12.45	8.03
Mecklenburg	26,719	4,210	12.47	8.02
Thuringia, with Allstädt and Oldisleben	16,899	3,799	12.53	7.38
Brunswick	87,307	17,008	12.69	7.88
Anhalt	85,909	16,255	12.64	7.91

The average number of days in operation during the year 1889–'90 was one hundred.

PRODUCTION.

The amount of sugar produced during that time in the Rhineland was about 40,000 tons. (For the whole of Germany see foregoing table.)

IMPORTS.

The quantity of sugar imported during the year into the Rhineland was 298 tons of refined sugar, 65 tons of raw sugar, and 30 tons of molasses.

Table showing the imports of sugar into Germany during the last decade.

Years.	Imports.	Years.	Imports.
	Tons.		*Tons.*
1880–'81	5,607	1885–'86	5,774
1881–'82	5,733	1886–'87	4,678
1882–'83	6,601	1887–'88	7,282
1883–'84	5,376	1888–'89	3,924
1884–'85	5,303	1889–'90	3,742

TAXATION AND BOUNTY.

At present the sugar tax in Germany is a double tax: a tax on the beets—the so-called material tax of 80 pfennigs (about 20 cents) on every 100 kilograms of beets—and a consumption tax of 12 marks on every 100 kilograms of prepared sugar.

Table showing the amount of taxes received from sugar, together with the amount of bounties on the exports, etc.

Years.	Gross receipts from tax on beets.	Gross receipts from imports.				Rebate on sugar exported.	Net receipts from tax and duty.
		Import duty on refined sugar.	Import duty on raw sugar.	Import duty on molasses.	Total.		
1876–'77	$13,523,095	$550,476	$58,095	$189,762	$798,333	$2,766,890	$11,554,538
1877–'78	15,584,323	350,952	66,428	170,238	587,142	4,287,857	11,863,898
1878–'79	17,633,333	278,571	87,380	136,666	502,617	6,101,666	12,034,284
1879–'80	18,303,333	212,619	95,476	103,333	411,428	5,809,285	12,905,476
1880–'81	24,086,666	161,667	73,143	118,575	353,381	13,451,428	10,988,619
1881–'82	23,893,095	157,142	85,952	118,095	361,189	10,712,381	13,541,903
1882–'83	33,322,380	150,238	135,238	126,191	411,667	17,713,357	16,020,690
1883–'84	33,973,809	111,190	107,143	115,000	333,333	22,929,048	11,378,094
1884–'85	39,629,285	90,238	118,096	119,762	328,095	30,583,809	9,373,571
1885–'86	26,934,523	87,857	149,524	103,809	341,190	21,444,524	5,831,189
1886–'87	33,622,143	100,238	93,570	99,285	293,093	25,909,762	8,005,474
1887–'88	28,187,380	95,000	250,714	96,190	441,904	25,135,238	3,494,046
1888–'89	23,498,333	136,190	138,333	76,904	351,427	19,065,738	4,784,022
1889–'90	33,560,714	116,666	150,476	91,904	359,046	14,741,666	19,178,094

In the above table of the gross receipts from the raw-beet tax in the years 1888–'89 and 1889–'90 are included the net amounts of the consumption tax, which are $8,457,986 and $14,850,934, respectively.

The rates of taxes have been as follows: From September 1, 1844, to September 1, 1850, 30 pfennigs per 100 kilograms of beets; from September 1, 1850, to September 1, 1853, 60 pfennigs; from September 1, 1853, to September 1, 1858, 1.20 marks; from September 1, 1858, to September 1, 1869, 1.50 marks; from September 1, 1869, to August 1, 1886, 1.60 marks; from August 1, 1886, to August 1, 1888, 1.70 marks; from

August 1, 1888, and up to the present, 80 pfennigs. The consumption tax at present is 12 marks per 100 kilograms on prepared sugar.

The number of officers employed in connection with taxes and payment of bounty on sugar is about 3 or 4 persons to every factory.

PAYING BOUNTY.

The material tax is paid by the factories on the weight of the beets worked. The consumption tax is paid on the prepared sugar when it leaves the factories or the Government storehouses. Sugar that is exported is free from the consumption tax and the tax on beets, the latter being returned to the manufacturers. This repayment of the material tax to the manufacturers may be called a bounty or export premium. If the rebate on export sugar corresponded exactly to the amount of the material tax on the beets, all the sugar exported would simply be free from any tax. But the proportion of the weight of the beets to that of the weight of the sugar fixed by the Government for the bounty on export sugar does not in reality correspond, it having been reckoned that it took 10.62 double centners (1 double centner = 100 kilograms) of beets to produce 1 double centner of sugar. The material tax on 10.62 double centners of beets is 8.50 marks. Accordingly, the 8.50 marks are returned to the manufacturer, on the ground that he had paid 8.50 marks material tax on the beets that were reckoned necessary to produce 1 double centner of sugar. Now, well-equipped factories require only 7.85 to 7.95 double centners of beets (which was the average last year), instead of 10.63 double centners, to produce 1 double centner of sugar. For this amount of beets the manufacturers did not pay 8.50 marks material tax, but 6.30 marks. The manufacturers received back, therefore, on the sugar exported not only the material tax, but an addition of 2.20 marks in cash from the Government on every double centner of sugar exported. This surplus paid by the State to the manufacturers is nothing more than an export premium or bounty presented to the manufacturers by the State.

In the year 1889–'90 the State received nominally $18,714,285 material tax on 9,822,635 tons of beets worked and paid back on sugar exported $14,741,666, so that, after deducting $747,620 for the cost of administration, there remained for the State only $3,225,000 from the total amount of the taxes collected on the beets. However, if we take the total amount of raw sugar exported during the year 1889–'90, which was 493,831 tons, and multiply it by 2.20 marks, which the Government had to pay in addition to the rebate on this amount of sugar, we find that the manufacturers were made a present by the Government in the shape of an export premium of a trifle over $2,500,000 on this amount of raw sugar exported.

BOOKS.

I am informed by a large manufacturer that there is no special book required to be kept, but that the books kept by the factories are at the disposal of the tax officials.

EXPORTS.

Table showing the export of raw sugar, candies, and other hard sugar.

Years.	Raw sugar.	Candies.	Other hard sugar.
	Tons.	*Tons.*	*Tons.*
1876–'77	46,218	7,393	4,342
1877–'78	71,201	14,001	8,341
1878–'79	103,471	19,356	11,396
1879–'80	95,161	25,236	9,705
1880–'81	221,442	35,378	20,681
1881–'82	253,931	39,916	14,413
1882–'83	390,702	49,381	24,218
1883–'84	491,176	64,246	29,867
1884–'85	553,793	76,015	31,885
1885–'86	404,071	66,019	20,568
1886–'87	489,680	130,378	23,882
1887–'88	344,710	132,212	20,743
1888–'89	412,424	164,151	15,650
1889–'90	493,830	215,736	9,419

NEW SUGAR LAW.

A new imperial law regarding the taxation of sugar was issued last May, which will go into effect on the 1st of August, 1892.

The new law does away with the so-called material or weight tax on the raw beets and raises the consumption tax from 12 marks to 18 marks per 100 kilograms, net, of prepared sugar. The import duty on hard and "fluid" sugar of all classes is placed at 36 marks per 100 kilograms. Foreign sugar imported under official control for further manufacture by the sugar factories will pay only the consumption tax of 18 marks per 100 kilograms.

Under the new law a bounty is granted on export sugar for a certain number of years, namely, from August 1, 1892, to July 31, 1895, that is, sugar that has been prepared during that period, as follows, on every 100 kilograms for export, provided that amount in any case is not less than 500 kilograms:

	Marks.
Class 1—raw sugar containing at least 90 per cent of sugar, and refined sugar under 98 per cent and not less than 90 per cent of sugar	1.25
Class 2—sugar candy and sugar in hard, white loaves, in blocks, bars, cubes, or which has been made small in the presence of the revenue officials, so-called crystals and other hard, white, cut sugar in crystal form, containing at least 99½ per cent of sugar	2.00
Class 3—all other hard sugar, also all dry white sugar (containing not over 1 per cent of water) in crystal, crumb, or flake form of at least 98 per cent of sugar, in so far as the same does not come under class 2	1.65

From the 1st of August, 1895, to the 31st of July, 1897, it is as follows on every 100 kilograms for export:

	Marks.
Under class 1	1.00
Under class 2	1.75
Under class 3	1.40

WM. D. WAMER,

UNITED STATES CONSULATE, *Consul.*

Cologne, December 15, 1891.

BEET SUGAR IN HESSE-NASSAU.

REPORT BY CONSUL-GENERAL MASON, OF FRANKFORT.

The province of Hesse-Nassau, in which Frankfort is situated, is nearly coextensive in boundaries and area with the district of the Frankfort consulate-general; and for the purpose of this report the statistics of Hesse-Nassau, as far as they exist, are adopted as those of this consular district, with the remark, however, that official statistics in this country are for the calendar year, the fiscal year ending June 30 being unknown in European affairs. With these unavoidable limitations, the inquiries propounded by the circular are answered as follows:

(1) There were four beet-sugar factories in operation in Hesse-Nassau during 1890–'91.

(2) The average days in operation are one hundred in each year, viz, from the 15th of September to the 10th of January.

(3) These four factories in 1890 worked up 84,000 tons of beets grown on 2,046 hectares of land—an average of 41.05 tons per hectare, or 16.62 tons per acre. The product of this manufacture was 9,708 tons of raw sugar and 2,782 tons of molasses.

(4) No statistics of sugar import for Hesse-Nassau alone exist. For the whole of Germany the sugar import was as follows:

	Pounds.
1888	10,786,956
1889	8,088,940
1890	13,176,120
1891 (first 6 months)	4,638,920

(5) The revenue tax on sugar production is assessed under two schedules, viz, a tax of 18 cents per 100 kilograms (equal to $1.80 per gross ton of 2,200 pounds) on the beets which are consumed in the manufacture and $2.85 per 100 kilograms ($28.50 per gross ton) on the sugar produced. The revenue derived from these two forms of taxation during the year ended July 31, 1890, was as follows:

Tax on raw beets:	
Gross revenue	$18,602,278
Net revenue	3,965,377
Tax on manufactured sugar:	
Gross revenue	12,675,642
Net revenue	12,655,169

The statistics for 1890–'91 will appear during the coming month of December.

(6) The amount of revenue derived from duties on imported sugar during the year 1890 was $427,828; first six months of 1891, $150,614.

(7) The bounties paid by the German Government on exported sugar for the year 1890 were $17,389,134; for first six months of 1891, $10,341,378.

(8) At each factory there are on duty during the working season three officials for weighing beets and sugar, besides one overseer, one guard, and,

during the height of the shipping season, one assistant, or six in all for each factory, five of whom are constantly in attendance during operation.

(9) The bounty on exported sugar varies from $2 per 100 kilograms for raw sugar 90 per cent pure to $2.53 per 100 kilograms for refined sugar 99½ per cent pure and $2.38 per 100 kilograms for sugars below 99½ and above 98 per cent in purity. The sugar, in sacks, is weighed at the factory and sent to the frontier in sealed cars, and the bounty only paid when it crosses the frontier. This entire system will be revolutionized by the new law which will go into effect on the 1st of August, 1892. Under this new law the tax on raw beets will be abolished and the tax on manufactured sugar raised from $2.85 to $4.28 per 100 kilograms. Under the same law the export bounties on manufactured sugar will be gradually reduced until they wholly expire in 1897.

(10) No specified form of book is required to be kept by sugar-producers, but it is obligatory that the accounts kept at each factory shall show readily and at all times the essential statistics of the business—the amount of raw material received and used and the amount and quality of sugar produced during each day of the season. Should a stock of last year's sugar remain on hand on the 31st of July, this must be duly sampled and registered, and all accounts of whatever kind must be open to the inspection of the revenue officers at any moment. Moreover, the factory must be built upon plans previously submitted to a Government officer, who inspects the premises during the progress of construction. Should any subsequent enlargement or alteration of the factory be made, such modification must be first submitted to, and approved by, the proper officer. While no definite form of building or arrangement of rooms is specified, it is required that the factory shall be so constructed that the revenue officials can see clearly every part and process of the manufacture, from the time the beets enter the weighing room until the finished product is weighed out for sale or export. All windows and doors must be provided with secure fastenings and so arranged that the chief inspector can close and lock up the premises during the idle season or absence of the revenue officers. Entrance doors, windows, and passages between the various apartments are reduced to the smallest number consistent with the actual necessities of the case. Quarters for the revenue officers must be provided in each factory, where they can be comfortably lodged in case their services are to be needed during the night. They must also have adequate rooms for an office and the reception of their instruments and records. For such factories as were already in operation when the law of July 9, 1887, went into effect, the cost of such additions and alterations as were necessary to comply with that act was paid from the imperial treasury. The whole process of sugar-manufacture in Germany is, from first to last, under the immediate inspection and control of the revenue officers.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, November 10, 1891.

BEET-SUGAR MANUFACTURE IN GERMANY.

REPORT BY CONSUL KELLOGG, OF STETTIN.

This report covers the consular district of Stettin, which embraces Pomerania, West Prussia, East Prussia, and the neighboring provinces of Brandenburg, Mecklenburg, and Posen.

(1) The number of beet-sugar factories in operation during the fiscal year ended June 30, 1891, was as follows: Brandenburg, 14; Pomerania, 8; Mecklenburg, 8; Posen, 15; West Prussia, 19; East Prussia, 2 (one out of work); total, 66.

(2) The average number of days in operation were: Brandenburg, 95; Pomerania, 95; Mecklenburg, 95; Posen, 85; West Prussia, 85; East Prussia, 75 to 80.

(3) The sugar produced during that time amounted to 251,357,400 kilograms. The statistics do not keep apart the single provinces.

(4) The quantity of sugar imported was unimportant.

(5) The amount received from internal tax on sugar produced in these provinces can not be fixed, because the sugars of the different provinces of Prussia and states of Germany are not kept apart. The rates are 80 pfennigs per 100 kilograms on raw-beet material to be worked into sugar, which is equal to about 8 marks per 100 kilograms of sugar produced from them, while a duty of 12 marks per 100 kilograms is paid on sugar for home consumption.

(6) As there is scarcely any foreign sugar imported, the duty received is of no account.

(7) The amount paid in bounty on sugar of this district can not be fixed, because the bounty is payable at the place where the sugar has been shipped abroad or stored in bond, no matter from which German district it has come. The rates of bounty are 8.50 marks per 100 kilograms for sugar of above 90 per cent polarization, 10 marks per 100 kilograms for crushed sugar of above 98 to 99½ per cent polarization, and 10.65 marks per 100 kilograms for sugar of above 99½ per cent polarization.

(8) The number of officers employed in connection with taxes and payment of the bounty on sugar is as follows: Two to three officers are stationed at each factory during the season, who are superintended by a superior officer; but no special officers are employed to receive or to pay taxes and bounties only and alone on sugar.

(9) The method of paying the bounty is as follows: To those shipping sugar abroad or storing it in bond an acknowledgment (bond) is given, amounting to sums in accordance with the quantities and the rates given above. These bonds are payable on the 25th day of the sixth month after the bond has been issued; but for all sugar shipped abroad or stored in bond from the end of February to the 25th of August the bonds issued are payable on the 25th of August. The sugar may remain in bond for twenty-four months,

after which the duty for home consumption ought to be paid; but this period may still be prolonged on a special request.

(10) No special form of book or books is required to be kept, as the customs officers stationed at the factories control the stocks independently of the manufacturers, though occasional comparisons may be made to prevent mistakes.

Table showing the yield of beets in the Stettin consulate.

Provinces.	Area.	Yield.	Average yield per morgen.*	Average polarization of beet juice.	
				1889–'90.	1890–'91.
	Morgen.	*Kilograms.*	*Kilograms.*	*Per cent.*	*Per cent.*
Brandenburg	32,643	272,952,300	8,360	14.06	13.82
Pomerania	28,262	222,694,550	7,880	14.28	15.21
Mecklenburg	31,656	254,451,700	8,040	14.06	13.74
Posen	101,447	705,673,700	6,955	14.25	13.8
West Prussia	76,093	619,835,800	7,950	13.38	12.9
East Prussia	7,662	55,378,000	7,255	14.47	13.9
Total	277,703	2,130,981,050	7,675	13.96	13.69

*1 Prussian morgen = 0.63 acre.

JAMES C. KELLOGG,
Consul.

UNITED STATES CONSULATE,
Stettin, November 15, 1891.

TRADE WITH THE SAN BLAS COAST.

REPORT BY MINISTER ABBOTT, OF BOGOTÁ.

By a decree dated September 25, 1891, the President, in the exercise of the authority conferred by section 2 of law 33, has prescribed regulations for commerce with the San Blas coast. A translation of this decree is inclosed.

On November 23, 1890, I forwarded a copy of section 1 of this law 33, relative to the port of Bocas del Toro. I did not think it necessary to send section 2, relative to the San Blas coast trade, until some executive action had been taken thereunder. I now inclose a translation of the latter section, being the one whose publication attracted the attention of ship captains.

The translation of the law which was forwarded to the Department by Consul Sims in his report of April 25, 1891, and by the Department forwarded to me in its instructions, is incorrect and misleading.

That translation reads:

> The governor [Government] is authorized to permit free commerce by coast in the ports of the gulf of San Blas, etc.

To one unacquainted with Colombian law (and perhaps many shipmasters find themselves in that condition) the English words "free commerce

by coast" would naturally imply, with the context, that rules might be established by the Executive to permit trade between all points on the coast and San Blas.

This, however, is not correct; and, since shipowners will undoubtedly be disappointed to learn that the new decree does not allow them to trade except between ports of entry and San Blas, particularly excluding Colon and the free territory, a detailed explanation should be made for their benefit.

In Colombia there are three classes of ports, viz, free ports, ports *habilitados*, and ports not *habilitados*.

Importations into free ports and ports *habilitados*, *i. e.*, ports of entry having a custom-house, are permitted. Those into ports not *habilitados* are expressly forbidden. Commerce between free ports and ports not *habilitados* is prohibited. All these rules remain the same as before the inclosed decree was made.

Colon is a free port. San Blas ports are ports not *habilitados*, so that there can be no legal importations made into San Blas from Colon or from any other portion of the free territory, including Portobelo.

In 1889 and 1890 certain difficulties arose between shipowners and the Colombian Government relative to the San Blas trade, with which you are familiar. Full reports were sent from this legation upon the subject. From them it will be seen that legal importations to San Blas could only be made by first entering at a port *habilitado*, or port of entry. From that port the vessel had to sail for San Blas, and from the moment of sailing the vessel was carrying on what we might call coast commerce, but what is called in Colombian law *comercio costanero*. *Comercio costanero* is that commerce which is carried on between ports *habilitados* and those not *habilitados*, and includes trade in native products and foreign products which have paid import duties.

Included, also, under our phrase "coast commerce" is what Colombian law designates as *cabotage*, which is commerce by sea between ports *habilitados* in foreign products only, they being first duly imported into a port *habilitado* and paying import duties.

It will be noticed that coast commerce, or coast trade, or commerce by coast can only apply to and include *comercio costanero* and *cabotage*; and, as both these exclude the idea of trade between free ports (as Colon) and other ports (as San Blas, which is not *habilitado*, or Cartagena, which is *habilitado*), the English translation above referred to ("commerce by coast") can not by any possibility apply to any other than those two classes of traffic.

An examination of the original law confirms this view. The Government is there authorized to permit free *comercio de cabotage* and *costanero*. It has no authority by this law to permit any other kind of coast trade.

The above should explain clearly the error into which a shipmaster might fall in reading the faulty translation of the law forwarded to me. This law was passed to enable the Government to make clear to importers the con-

ditions under which trade may be carried on with the San Blas coast. The preëxisting laws are not essentially changed by the decree, but the former somewhat imperfect regulations in respect of this commerce are elucidated and some new ones are added.

The result of the whole matter is that the ship captain who desires to import goods into San Blas must first enter at a port *habilitado* and pay his duties, when he may sail to San Blas. Doubtless, in view of the distance he may have to traverse, he will be refunded 25 per cent of the duties paid, provided he has complied with the laws of the land.

The foregoing, taken in connection with previous dispatches in 1890, will, I think, make the whole matter clear.

The new decree will not, however, be of great, if any, service in putting a stop to the smuggling on the part of Portobelo merchants complained of by Consul Sims. It simply prescribes new rules and explains old ones relative to *comercio costanero* and *de cabotage*; and, further, renders certain the right of ships to proceed to San Blas after the payment of duties in the proper port—a right which was always before a little shadowy.

The rules are, in view of all the circumstances, reasonable and necessary, and, if smuggling can not be stopped by these and other laws, it must be attributed to the peculiar difficulties of the task and the few resources the Government has at its command.

No honest shipowner desires the suppression of smuggling more than does the Colombian Government. But it would be nearly impossible to establish and maintain custom-houses among the Indians of San Blas, and immense practical difficulties would present themselves in permitting importations by way of the free port of Colon; and, since the law does not permit the Executive to establish rules for such a class of "commerce by coast," it seems to me that no more action can be requested.

One thing is certain, and that is that Colombia is not discriminating, and has no desire to discriminate, against our trade. If unsuppressed smuggling be such a discrimination, it is unintentional and one that the Government strives to prevent as much as is possible with the resources at its command.

A copy of decree No. 143 of 1887, referred to in article 4 of the decree, is herewith inclosed. Translations of all the named articles have not been deemed necessary, but the originals are forwarded to complete the files in regard to the subject.

It remains to say that the word "franco" in section 2, law 33, of 1890, does not imply that the San Blas ports are to be made "free" in the sense in which Colon is free, but simply that there shall be unimpeded trade with those points subject to the necessary regulations for the collection of import dues. I will also add that most difficulties in the San Blas trade are caused by a desire on the part of traders to proceed to Colon, pay a small tax, and carry their wares directly to San Blas to be there introduced free of duty. There seems to be a prevalent idea that in some way Colombia has been, or

ought to be, divested of her sovereignty over the San Blas coast, leaving it free to the world's trade. On the other hand, Colombia, while recognizing the necessities of commerce, believes it to be of the greatest importance to keep a sharp watch upon that portion of her territory. There are good and sufficient reasons for this not necessary to be here stated.

The laws on this subject are of long standing and are reasonable, and no such radical change as will throw open San Blas can be expected. It would be just as reasonable for our merchants to ask free trade with Cartagena as with San Blas, and they should be advised that they have only to obey the law to secure courteous treatment from this country.

JOHN T. ABBOTT,
Minister.

UNITED STATES LEGATION,
Bogotá, October 7, 1891.

DECREE NO. 867—COMMERCE WITH THE GULF OF SAN BLAS.

[Inclosure 1 in Minister Abbott's report.—Translation.]

The President of the Republic, in the exercise of the authority conferred by article 2 of law 33 of 1890 and by section 5 of article 32 of the fiscal code, decrees:

ARTICLE 1. Commerce from the Atlantic ports of entry (*puertos habilitados*) to the ports of the Gulf of San Blas, in the department of Panama, is hereby permitted.

ART. 2. The regulations for this commerce shall be those contained in articles 302–307, 309, 310, 315, 316 of the fiscal code and the following in addition:

The regulations of article 313, when the captain of the boat carrying merchandise shall not present, in place of the permit therein mentioned, the manifest named in article 308.

When the boat goes in ballast, it must carry the certificate required by article 314.

Each boat shall carry on board a corporal of the custom-house force or a guard, whose duty it shall be to verify, in the unloading of merchandise in San Blas, proceedings analogous to those which are prescribed for exportations by section 3, article 207, of the said code, and to prevent the boat from introducing imports at other points.

ART. 3. There shall be a rebate of 25 per cent of import dues on merchandise which may be carried from the custom-houses to San Blas, which shall be returned by that office [*i. e.*, by the custom-house officials of the port through which the importations are effected] to the respective importer when the proper proof has been received that the said merchandise has been unloaded at San Blas.

ART. 4. In case of exportations through the mentioned ports of the Gulf of San Blas, the same formalities shall be observed as are required in other ports by articles 207 and 208 of the fiscal code and decree No. 143 of 1887. (Diario Oficial, No. 6966.)

The collector of customs at Cartagena is authorized to fix the number of days to be considered necessary for the return to that port of the employés of the custom-house force who may go to San Blas on board of vessels in conformity with article 208 above cited and for the purposes therein prescribed.

ART. 5. The provisions of the preceding paragraph shall also be observed in respect to the employés of the custom-house force named in article 2 of this decree.

ART. 6. The carrying of foreign merchandise from foreign countries, from free ports, and from those not ports of entry (*no habilitados*) to those of San Blas is prohibited.

ART. 7. The carrying of foreign merchandise from the San Blas coast to the other ports of the Republic is also prohibited.

ART. 8. Violations of the provisions of this decree, and, in general, of existing provisions in respect of custom-houses and the police of ports which may become applicable by reason thereof, shall be punished according to law.

ART. 9. The gunboat *La Popa* shall exercise constant vigilance to prevent commerce with the said San Blas coast without compliance with the formalities of the present decree, and shall take such steps as may be necessary in case it is violated. For this purpose it may demand the exhibition of the manifest named in article 2 whenever it may meet with any laden vessel bound for San Blas.

Given in Suesca September 25, 1891.

LAW 33 OF 1890.

[Inclosure 2 in Minister Abbott's report.—Translation.]

* * * * * * *

ART. 2.—The Government is hereby authorized to permit free coast trade* with the ports of the Gulf of San Blas, on the Atlantic coast of the department of Panama, and to establish and regulate the tributary system to which that trade may be subjected.†

DECREE NO. 143 OF 1887, CONCERNING RULES FOR EXPORTS BY WAY OF TURBO.

[Inclosure 3 in Minister Abbott's report.—Translation.—From the Diario Oficial, No. 6966, of February 26, 1887.]

The President of the Republic of Colombia, in execution of article 19 of law 36 of 1886 concerning custom-houses, and in accordance with paragraph 3 of article 120 of the constitution and paragraph 5 of article 32 of the fiscal code, decrees:

Sole article.—For exports by way of Turbo the same rules will be observed as for those made by way of Zispata prescribed by articles 207 and 208 of the fiscal code.

The administrator of the custom-house at Cartagena is authorized to fix the number of days deemed necessary for the return to that port of the custom-house officers who may go to Turbo on board of the vessels in conformity with the aforesaid article 208 and for the purposes stated by it.

Given at Bogotá the 22d of February, 1887.

TRADE WITH THE SAN BLAS COAST.

SUPPLEMENTARY REPORT BY MINISTER ABBOTT.

In continuation of the subject of my report of October 7 last, relative to trade with the San Blas coast, I have to inclose a translation of a decree modifying decree No. 867 transmitted as inclosure in said report. By the new regulation it will be seen that all vessels bound for San Blas are first to

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*"Coast trade," used here for lack of a better term, includes only that designated by Colombian law as *comercio de cabotage* and *costanero*.

†"Tributary system," as here used, means all rules and regulations deemed necessary for the due collection of import duties and for securing the payment of such additional taxes and the performance of such u rther obligations as may be required to prevent smuggling or other violations of law.

enter the port of Cartagena. The other ports of entry are thus excluded from any supervision over the San Blas trade. Since Cartagena is the most convenient port of entry for ships to visit, there would seem to be no hardship entailed by this restriction.

JOHN T. ABBOTT,
Minister.

UNITED STATES LEGATION,
Bogotá, November 9, 1891.

MODIFIED DECREE.

[Inclosure in Minister Abbott's supplementary report.—Translation.]

No. 986.]

The President of the Republic, in the exercise of the authority conferred by article 2 of law 33 of 1890, decrees:

Commerce with the ports of the Gulf of San Blas, in the department of Panama, shall only be permitted through the port of Cartagena.

Decree No. 867 of the present year upon commerce with said gulf is reformed in accordance with the above provisions.

Done at Bogotá October 26, 1891.

GERMAN PLATE-GLASS MANUFACTURE.

REPORT BY CONSUL-GENERAL MASON, OF FRANKFORT.

I have the honor to report that your instruction, dated October 12, requiring certain information concerning the grinding and polishing of plate plass for mirrors as practiced in Germany, was received at this office on the 24th of October.

There being no manufacture or export of plate glass in southern or western Germany, except in the consular districts of Aix la Chapelle and Fürth, I at once forwarded copies of your instruction to the consulates at those two points—both of which are remote from Frankfort—accompanied by letters asking Consul Black, at Nuremberg, Consul Ziegler, at Aix la Chapelle, and Commercial Agent Dunlap, at Fürth, to obtain at the earliest possible moment the desired information, and to present the same in reports as clear and detailed as possible.

Consul Black, of Nuremberg, reported that no plate-glass manufacture of any importance existed in his district since the partition of the district of Fürth, where all such industry was located.

I continued to urge Mr. Dunlap, who prosecuted his investigation at Fürth with great spirit and persistence in face of many obstacles. He finally succeeded in obtaining admission to a plate-glass factory at Fürth, for which the proprietors are entitled to our best thanks for their courtesy, and the result of his inquiry is contained in the report which is herewith inclosed, and which was written in the presence of his dying wife, whose remains he is now conveying to the United States for burial.

These circumstances are stated thus in detail to explain the delay that has attended its transmission.

The Department will doubtless understand that information on this subject is all but impossible to obtain in Germany. The whole plate-glass manufacture in the Frankfort supervision is concentrated at the two points named. All the manufacturers are leagued in a syndicate or pool, and access to their works is rigidly denied to everyone, especially Americans. The nightmare of most German manufacturers is the fear that in some way Americans will discover the secrets of their trade and transfer their industries to the United States, with the result of ultimately destroying their best foreign market. The efficiency of American consuls in obtaining information of this character is well known, so that they are, as a rule, more rigidly excluded than anyone else from the factories where secret processes are performed. The gentleman who asks this information through the Department is doubtless aware that there are in New York three firms, viz, Messrs. Bendit, Drey & Co., P. Wiedener & Bro., and Senson, Bache & Co., who grind and bevel glass from Bavaria by the same methods that are employed at Fürth. All these firms belong to the syndicate above described, and the difficulty of obtaining information as to their processes is presumably the same in New York as here.

It is a matter of frequent comment among plate-glass manufacturers in Germany that their business in the United States hangs by a very slender thread, and that, as soon as their methods are well understood in our country, improvements in machinery are sure to follow, which will soon enable American glass-makers to not only supply the home market, but enter the field of competition as exporters. It was mainly for the purpose of resisting this tendency and guarding the secret of their processes that the glass-makers' syndicate was formed.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, December 7, 1891.

GERMAN LOOKING-GLASS PLATE.

[Inclosure in Consul-General Mason's report.—Report by Commercial Agent Dunlap, of Fürth.]

The works where nearly all the three-quarters white German looking-glass plate used in the United States is blown are located near the borders of Bavaria and Bohemia, near the city of Egar, in Bohemia. There are numerous large and extensive works, besides innumerable smaller ones, the greater number of which belong to a pool, which regulates production, prices, etc.

The greater part of the glass, when blown, ultimately finds its way to the city of Fürth, Bavaria, where it is stored in a pool warehouse, whence it is delivered to members of the pool, no one outside of that organization being able to purchase a single square foot for love or money, the capacity of each manufacturer being well known and no increase of manufacture above a certain percentage being permitted. A few small manufacturers are independent of

the German Looking-Glass Plate Company, in New York, in so far that they are not required to sell their finished product to that institution, but may find customers where they can; but they can only secure their certain percentage of the raw material, hence they are unable to make any great impression upon the market. It may also be said here that they are all very well satisfied with the situation, for as long as the pool maintains prices they sell at the same or very nearly so.

GRINDING OF PLATES.

After leaving the glass-blowers' hands the plates are quite rough, and it becomes necessary to grind them. There does not appear to have been any material improvement in the method of grinding, though perhaps there has been in the machinery. The glass is fastened to a marble or cast bed of sufficient dimensions to receive the largest plates. If necessary, smaller plates are used to fill the table. The plates are held in place by a thin bed of plaster of Paris, the moisture of which holds them securely. It is well to say that the upper plate is turned upside down while the glass is being placed in position, and, when ready, is turned over carefully. Both the upper and lower beds revolve—in different directions, of course. The grinding material is coarse sand at first, a finer quality being used consecutively until the plate is finished. The time required varies, from sixteen to twenty-four hours being generally required.

POLISHING.

The next process is that of polishing the plate to make it transparent, preparatory to the silvering. The same kinds of beds are used as in grinding, with this difference, that they are stationary; and the plates are held in position in the same manner. The polishing is done by running square disks covered with felt back and forth across the surface. The tables usually stand in gangs of a dozen, six on each side, so that, as the rubbers move back and forth, no motion or power is lost. In most of the works the disk revolves by the motion of sliding across the surface, but in the factory of N. Wiederer & Co., Fürth, a new polisher is in use, to which a rotary motion is given by chain gearing, which performs the work in about half the usual time—fifteen minutes instead of thirty. The polish used is a native Bavarian product, and is called "Potte" or "Bolus," it being an earth strongly impregnated with iron, and is kept moistened during the process, one man being required to attend six machines. As many pieces of glass may be laid upon the polishing table as it has capacity for, it being generally 30 by 90 inches.

BEVELING.

If this process is required—and the greater number seem by the demand to require beveling—the plates are removed to an iron or stone cylinder 12 to 15 inches in diameter, revolving slowly, where the edge to be beveled is held by the operator on the face of the grinder, applying at the same time moistened silver sand to the stone. A frame at the end serves to hold the glass from slipping, and steps upon this regulate the angle of the bevel. Expertness upon the part of the workman is necessary to do a smooth, even job. From the grinding of the bevel the glass is taken to a round polisher, where the beveled surface is held upon a felt cylinder kept supplied with "Potte" until it is polished. About fifteen minutes are required by this process.

PRICE OF RAW GLASS.

It has been impossible for me to secure any satisfactory information regarding the cost of anything, either for the raw plate, the polished and beveled plate, or the cost of any part of the labor. I am told that a plate 40 by 18 or 24 by 30 costs at the glass-blowers' about 3 marks, or nearly 74 cents. I infer, however, that this is the warehouse price in Fürth.

Smaller sizes cost proportionately less, larger ones much more. A finished plate of the above sizes ready for silvering is said to cost an additional 3 marks. How near these figures are to being correct I can not tell, but the following seems to be about the ruling price for the

beveled plates unsilvered, delivered free of charges at any seaport ready boxed for shipment:

Sizes.	Prices.	
	Marks.	
30 by 24	5.00	$1.19
40 by 18	5.00	1.19
32 by 12	2,80	.66⅔
24 by 14	2.40	.57⅓
26 by 24	4.40	1.04⅔
40 by 30	8.40	2.00
34 by 28	6.70	1.59⅓

These prices may be cut 5 per cent.

H. J. DUNLAP,
Commercial Agent.

FERTILIZERS IN NEW SOUTH WALES.

REPORT BY VICE-CONSUL CAMERON, OF SYDNEY.

I have the honor to inclose herewith copy of a letter received from the agricultural department here in reference to the trade in fertilizers in this district.

ALEXANDER CAMERON,
Vice-Consul.

UNITED STATES CONSULATE,
Sydney, November 10, 1891.

THE DIRECTOR OF AGRICULTURE TO VICE-CONSUL CAMERON.

[Inclosure in Vice-Consul Cameron's report.]

DEPARTMENT OF AGRICULTURE,
Sydney, November 5, 1891.

Referring to your inquiries concerning phosphatic manures as used in New South Wales, I have the honor to reply as follows:

Until within recent times the only phosphatic manure used in New South Wales to any extent was bone dust, which is manufactured at all the boiling-down and meat-preserving establishments and sold principally to the fruit-growers and gardeners at £5 5*s*. per ton.

The different brands vary in composition, containing from 19 to 23 per cent of insoluble phosphoric acid and 1 to 4 per cent of nitrogen. I am not able to give the exact amount of bone dust used, but it must amount to several thousands of tons, as it has been much esteemed in the past by fruit-growers. In consequence, however, of the efforts of this department during the past eighteen months, the orchardists, market gardeners, and small farmers are beginning to use more extensively complete manures which contain superphosphate of lime as one of their constituents. These are made by the sugar-refining company to the extent of 2,600 tons per annum, and the demand is rapidly increasing, so that probably that company will not be able to supply it within a short time.

Their superphosphate is made from the bone ash used in refining sugar and is sold by them at £5 a ton under a guarantied analysis of 16 per cent of soluble phosphoric acid.

No distinction has yet been made between soluble and reverted phosphoric acid.

No superphosphate whatsoever is imported, except in the form of fixed manures, of which very little is used here, in consequence of the very high price as compared with the manures made by the sugar company.

No deposits of mineral phosphates have yet been found in this country, and therefore there is no manufacture of mineral superphosphates. The prices of phosphatic manures are reckoned at 6*s.* per unit of soluble phosphoric acid and 3*s.* 6*d.* per unit for the insoluble form.

There are no duties on manures imported into this colony.

If a genuine concentrated superphosphate were introduced into this colony, there would unquestionably be a demand in course of time, as the farmers, who would be the largest customers, are beginning to awaken to the necessity for phosphatic manures.

Hitherto the great fertility of the soil has met all demands for the past twenty-five years; but the number of farmers using manure is steadily increasing, as may be seen from the fact that two years ago the sugar company sold only 200 tons of their manures in New South Wales, whereas this year they have sold nearly 3,000 tons.

I have, etc.

N. C. L. ANDERSON,
Director of Agriculture.

CONSULAR INVOICES FOR BRAZIL.

REPORT BY MINISTER CONGER, OF RIO DE JANEIRO.

I have the honor to inclose a translation of decree No. 684, of November 21, 1891, having reference to consular invoices for Brazil, and the regulations governing the same, the original of which was published in the Diario Official of December 4.

E. H. CONGER,
Minister.

UNITED STATES LEGATION,
Rio de Janeiro, December 12, 1891.

DECREE NO. 684.

[Inclosure 1 in Minister Conger's report.—Translation.]

The President of the United States of Brazil has resolved to order observed the regulations which accompany this, signed by the minister of finance, for the execution of decree No. 169, of April 25 last, in which is determined among the documents named in No. 1 of article 491 of the consolidation of laws and table of rents, for the dispatch of articles or merchandise, subject to duty, may be also included the consular invoices.

MANOEL DEODORO DA FONSECA,
Barão de Lucena.

FEDERAL CAPITAL, *November 21, 1891.*

REGULATIONS WHICH REFER TO DECREE NO. 684.

[Inclosure 2 in Minister Conger's report.—Translation.

ARTICLE 1. To date from January 1, 1892, conforming with decree No. 1327, of January 31, and No. 166, of April 25, of the current year, the invoice, of which paragraph 1 of article 491 of the consolidation of laws of the custom-house and tables of rents treats, and which should accompany the merchandise that is to be sent to Brazil, will be a consular invoice recommended by the International American Convention.

ART. 2. This invoice will be formulated upon the annexed form, and the necessary blanks will be furnished to the exporter by the Brazilian consuls in sets of three.

They can be printed in the language of the country of origin or in that which predominates there, that is, in English, German, French, Spanish, Italian, or Portuguese; but the consular certificates, with the various provisions and extracts, must be printed in the national tongue.

ART. 3. To complete a consular invoice, the exporter must prepare in triplicate a list of the articles to be shipped to a port in Brazil, containing with great accuracy the names, marks, numbers, weight, kind, quality, quantity, place of origin, and value of the merchandise (article 341 of consolidation), and will present to the Brazilian consul, for its legalization, a known signature or the receipt of the purser of the ship or the employé of the dock where the ship shall receive her cargo.

§ 1. When the list of merchandise will not go on a single sheet, it can be continued on a supplementary sheet with the same conditions.

§ 2. The declaration as to weight must show the gross weight, liquid weight, and limit, according to the nature or kind of goods.

§ 3. The proof of origin of the merchandise referred to in section 1 of article 491 of the consolidation will be complete, not dispensing with the declaration of how acquired—in manufacture or in commerce—as to quantity, weight, quality, or the value of each quality. (Article 524 of consolidation).

§ 4. There is no limit to the value of a mercantile invoice, which must be always accompanied with a declaration of the place of manufacture or purchase.

§ 5. The proof of destination shall show:

(1) The locality where the article is to be sent and of the port at which it will arrive.

(2) Of the actual being of the party to whom it is directed.

(3) Of the remission or request being voluntary.

§ 6. The weight, measure, quantity, quality, and value will be regulated by law and by the custom of the place of remission or procedure.

§ 7. Except the part relative to the number, mark, or volume and addition giving prices, all the declarations must be written out in full.

§ 8. No merchandise is free from this formality, even though dispatched free of duty, whether by express provision of the tariff or by special concession of law.

ART. 4. Each copy of the invoice must be signed by the owner, by the seller, or by the shipper of the merchandise invoiced. In case it is impossible to do this personally, it will be signed by his agent, duly authorized by power of attorney presented to the consul.

Sole paragraph.—The signer of the invoice should further declare:

(1) That it is the whole truth.

(2) That it represents faithfully and truly the qualities and quantities of all the articles mentioned in it.

(3) That in the cost is included all the specified expenses.

(4) That there are no other discounts, bonuses, or drawbacks beyond the declaration.

(5) That he has not furnished and will not furnish to other persons another invoice with the articles mentioned in it.

ART. 5. The consul shall certify that the articles invoiced are sent by a certain steamer, he not being by this fact exempt from the requirements and regulations which appear in article 372 of the consolidation.

§ 1. A legalization should be made by means of a certificate under the consular seal, on each copy of the invoice—first and supplementary sheets when they have gone below the signature—in such a way as to guaranty their truth.

§ 2. On the certificate should appear the date on which the invoice was presented to the consul, the name and identity of the party by whom it was presented, and the port of destination.

§ 3. When the consul does not know the signature of the exporter or of the manufacturer or of the merchant selling, he may demand identification by legal means.

§ 4. All observations or consular corrections shall be written on the blank space in the margin to the right side of the invoice, where shall also be made reference to the supplementary sheets, when there are any, if the consul does not prefer to report the certificates on each one of them.

ART. 6. It is not lawful for the consul to delay the certificate or to retain the invoice beyond the necessary time for carrying out the examination which he may consider requisite under the contents or affirmations of the same, unless where there is a doubt upon their value, and in such case it is his duty to certify what is the real value of the merchandise in his opinion or as the result of investigation that he may have made, or, without these, leaving to the importer the obligation of proving to the contrary in the custom-house.

ART. 7. In order that the execution of the service may be perfect, the consul should familiarize himself as far as possible with a knowledge of the quality of the merchandise that is exported from the district in his jurisdiction, as well as the weights, measures, tares, discounts, customs, and practices of the market, etc., in such manner as to be able to fiscalize with exactness the invoices and satisfy every request.

§ 1. In order to certify correctly the value that it has in the market, the exporter of each article invoiced should most carefully indicate the value given to the merchandise equal to the sale effected for other countries.

§ 2. As to the relative articles of which Brazil may be the principal or one of the principal consumers, if he should suspect or discover that the sales are fictitious for determining a nominal price, he shall ascertain with the greatest care the real cost of the production, and, putting with this the necessary expense and the usual percentage for profit, certify with suitable observation and reservations.

§ 3. In such cases and in others (special) he should demand samples, which will be sent to the custom-house, especially when the descriptions in the invoices are not sufficiently clear. With each sample which is sent to the custom-house must be placed a card with the necessary provisions to prevent fraud and with the signature of the shipper of the merchandise or of his agent and the confirmation of the consul.

§ 4. When there is reason to suppose that it is intended to pass merchandise as the product of a country favored by a treaty celebrated with Brazil, which merchandise has been imported from other countries, he will endeavor to send the compromising evidence to the respective custom-houses, and with the base offered by these documents they will give information of fraud to the competent local department.

ART. 8. In countries where there is a Brazilian consul or consular agent, if they do not reside in the place of shipment of the merchandise, the invoice must be presented to the one nearest for legalization.

§ 1. In countries where there are no Brazilian consular authorities, the shipper will request of the respective fiscal there located such legalization, and, in default of this, shall apply to the local authority (article 369 of consolidation). If, however, no one of these is there to give it, the invoice can be duly legalized by the consul of any friendly nation resident in the place, and yet, in default of consuls, by two well known merchants of the place (exporters), mentioning exactly what he has done.

§ 2. It is understood by place of shipment that in which the article was manufactured, sold, prepared, and put in shape for exportation to Brazil, since it is from that point it is considered to have begun its journey, and not from the place where it is placed on shipboard.

ART. 9. An invoice for each mark is not necessary if the different marks go to the same consignee.

§ 1. However, an invoice can be had for each mark or for any one or more of the marks addressed to one consignee if it is for the convenience of those interested.

§ 2. One invoice can not include merchandise consigned to various parties or shipped on different vessels.

ART. 10. Each invoice will be formulated in series of three (exact copies), considered as one and subject to only one charge for consular legalization. (Article 5, sections 1 and 4.)

§ 1. The consul will remit one to the person presenting it, another to the custom-house to which the merchandise is destined, and the other place in the archives of his office.

§ 2. That remitted to the custom-house should be by means of the captain of the vessel and should be attached to the manifest; but it may be remitted by mail, but never by means of the party interested.

§ 3. That which is intended for the custom-house, after the stamp on the lower left-hand corner of the first page, must be signed and sealed, as shall be also the certificate of the value of the invoice, which shall also contain the consular number given it by him, the name of the consul, and the amount of the emolument received. All these, being gathered together, will be placed in an envelope and sealed, with the date and name of the consul, bound crosswise with straight ribbon, and sealed with sealing wax with the seal of the consul.

ART. 11. The invoices shall not be on clear paper that can be traced and later filled. The numbers in each must be written by hand. That sent to the custom-house should be folded conveniently and systematically in a vertical form, without folding across, in such form that the résumé made last on the left-hand margin and the consular certificate will occupy the two outside places.

ART. 12. The invoices authenticated in consulates in the interior will be transmitted to the consul of the port of shipment, accompanied by a descriptive list for the purpose of facilitating the comparison with the manifest referred to.

§ 1. The last-named consul shall himself certify it and satisfy himself that it is made in the exact terms required.

§ 2. In the last consulate must be made a copy, which shall be a true copy of the list furnished by the first and in addition the name of the owner and master of the ship in which the merchandise has been shipped.

§ 3. The copy will go with the invoice sent to the custom-house, the original list remaining in the archives of the consulate.

ART. 13. If the inspectors of the custom-houses, in the discharge of their duties, ask for copies of these documents in the archives of the consulates, the consuls will promptly furnish them. They can, in addition to this, furnish them to parties interested if so requested, authenticating them for the same charges made upon the originals.

ART. 14. The Government will not be at any of the expense of such investigations as the consuls may deem necessary, nor for professional consultations or attorneys' fees, nor for depositions or declarations or certificates by which they shall justify the observations made in the certificates in fulfillment of their duty.

ART. 15. The failure to perform this duty will make the consul incur the fine imposed by section 1, article 3, of the consolidation, and, as such, it will be considered as an omission of one of the requirements of the regulations.

BARON DE LUCENA.

FEDERAL CAPITAL, *November 21, 1891.*

PETROLEUM IN BERLIN.

TRANSMITTED BY CONSUL-GENERAL EDWARDS.

[Translated from the annual report of the Berlin Chamber of Commerce.]

In former years petroleum was an article of active speculation on the Berlin bourse, but in 1890 it had entirely lost this character. The trade confined itself to consumption, which had considerably increased in the growing city of Berlin. There was especially an increase in the use of American water-white petroleum among the higher classes on account of its greater security against the danger of explosion, its white color, and its small amount of odor as compared with the ordinary standard white petroleum.

The prices of petroleum fluctuated very little, and, on the average, were, for standard white loco wares:

Month.	Price.	Month.	Price.
	Marks.		*Marks.*
January	24.20	July	22.20
February	23.50	August	22.30
March	22.50	September	22.60
April	22.80	October	22.70
May	22.40	November	22.50
June	22.50	December	23.10

The consumption of Berlin and its immediate neighborhood amounted in 1890 to 360,000 barrels of American petroleum, as compared with 350,000 in 1889. It is also to be remembered that, owing to the weather (navigation was closed on November 15), a part of the back country did not obtain its petroleum from Berlin, as in former years, but from Stettin. According to the reports of the royal chief tax office, the importation of petroleum into Berlin from 1884 to 1890, inclusive, was:

Year.	Quantity.	Year.	Quantity.
	Kilograms.		*Kilograms.*
1884	34,876,076	1888	54,138,263
1885	37,539,434	1889	59,715,486
1886	39,775,000	1890	51,144,334
1887	47,229,234		

The apparent large falling off in 1890 is explained by the weather. The payment of duty follows on the ground of customs entry at the seaports, but, on account of navigation being closed, much does not reach Berlin until the beginning of the following year. On December 31, 1890, there remained in the Berlin warehouses 98,700 barrels.

The high value of the ruble at times in 1890 made it impossible for Russian (Nobel) petroleum to compete successfully with the very cheap American petroleum. The German-Russian Naphtha-Importing Company therefore sold in 1890 only 10,500 barrels (about 31,500 centners), against 14,000 barrels (42,000 centners) in 1889. Prices remained at about 50 pfennigs per 100 kilograms for American petroleum.

JAPANESE FLOOR MATTING.

REPORT BY CONSUL SMITHERS, OF OSAKA AND HIOGO.

The manufacture of floor matting in this consular district is a flourishing industry. During the past year the exports of this product from Hiogo to the United States amounted in value to 290,564 yen.* Of late years a great improvement has taken place in the manufacture of the higher grades of matting in both the quality and pattern. The woof of the best qualities is now generally made of cotton yarn or hemp, which greatly adds to the expensiveness and durability of the article.

The following statement, procured from the superintendent of the Okayama convict prison, will show the cost of manufacturing a roll of 40

*1 silver yen=91.7 cents.

yards of three different qualities of matting in that prison: Best quality—rush or Jancus, communis (143 pounds), 6.96 yen; hemp thread (8¼ pounds), 2.50 yen; dyeing, 1.50 yen; labor, 12.30 yen; total, 23.26 yen; second quality—rush (126 pounds), 5.20 yen; cotton thread (6½ pounds), 2.16 yen; dyeing, 0.70 yen; labor, 6.15 yen; total, 14.21 yen; third quality—rush (114 pounds), 3.68 yen; cotton thread (6½ pounds), 2.16 yen; dyeing, 0.50 yen; labor, 4.10 yen; total, 10.44 yen.

In the Hiogo convict prison matting of an inferior grade is manufactured at about 3.50 yen per roll. The merchants contract with the prison authorities to pay for the labor of the convicts only, the materials being supplied by them. Floor mattings, designated in the United States customs laws as "Chinese mats," are not made of straw, but of a soft rush grown in China and in the provinces of Bizen, Bingo, and Bungo, in the south of Japan, where the manufacture of matting is almost entirely carried on.

E. J. SMITHERS,
Consul.

UNITED STATES CONSULATE,
Osaka and Hiogo, October 27, 1891.

SHIPBUILDING ON THE MERSEY IN 1891.

TRANSMITTED BY CONSUL SHERMAN, OF LIVERPOOL.

The returns from the principal shipbuilding firms on the Mersey show that during the year now closing the total tonnage of vessels actually launched has not quite reached that of the previous year.

Messrs. Laird Brothers are engaged with work upon the following list: The twin-screw steamer *Independencia*, 2,000 tons gross register and 3,000 indicated horse power, built for South American owners; steel twin-screw steamer *Ibex*, 1,161 tons and 4,000-horse power, for Milford; steel twin-screw steamer *Duke of Clarence*, 1,850 tons and 4,000-horse power, for Fleetwood; steel twin-screw steamer *Oriente*, 800 tons and 675-horse power, for South America; and the iron twin-screw steamer *Sir Richard Grenville*, 420 tons and 800-horse power. In addition to the above, Her Majesty's battle ship *Royal Oak*, of 10,000 tons and 13,000 indicated horse power, has been rapidly advanced in hull and machinery during the year, and she will be ready for floating out of the building dock during the coming summer. Messrs. Laird Brothers have also constructed new triple-expansion engines of 4,000 indicated horse power for the London and Northwestern Railway Company's paddle steamer *Lily* and new boilers for the Southeastern Railway Company's paddle steamer *Mary Beatrice*, the hull and machinery of the latter vessel having been also overhauled and repaired.

Messrs. Royden & Sons have built the following: The steel screw steamer *Sedgemore*, 4,332 tons gross and 600 indicated horse power; the steel sailing ship *Lathom*, 3,081 tons; and the steel sailing ship *Alcedo*, 2,470 tons. These vessels are all registered at the port of Liverpool.

Messrs. W. H. Potter & Sons have built the steel sailing ships *Forteviot*, 3,080 tons, and the *Wanderer*, 2,903 tons, both for Liverpool owners. This firm has also on the stocks three other sailing vessels for Liverpool of 2,400, 3,000, and 3,200 tons, respectively, and also an iron caisson for the Mersey docks and harbor board.

Messrs. R. & J. Evans & Co. have built the iron sailing ship *Cordova*, 1,147 tons gross, registered at Liverpool, and they will launch on the 2d of January another iron ship of 1,290 tons, also for Liverpool.

Messrs. James Harland & Co. have built the wooden screw steamer *Zillah*, 139 tons gross and 110 indicated horse power, registered at Liverpool.

Mr. Caleb Smith, jr., of Toxteth Dock, has had several repair contracts on hand during the year, and has also executed a good many orders from abroad for the supply of masts and spars.

The above figures show a total tonnage launched in the present year of 23,383 tons, as compared with 30,577 tons in 1890, 35,773 tons in 1889, 22,538 tons in 1888, 10,664 tons in 1887, and 20,966 tons in 1886.

Messrs. Wainwright & Co., Caryl street, have also had some good repair work, including the four-masted bark *Curzon* and the sailing ship *Penthesilia*.

THOS. H. SHERMAN,

UNITED STATES CONSULATE, *Consul.*

Liverpool, December 16, 1891.

INDIAN-CORN OIL VS. LINSEED OIL.

REPORT BY CONSUL-GENERAL EDWARDS, OF BERLIN.

The great strain to which certain industries have been subjected, owing to a scarcity of Russian linseed oil in this market, was such as to force the manufacturers of soft soaps to look elsewhere for a supply of oil.

The East India linseed oil was tried, but found wanting owing to the fact that it was too sensible to the cold. The attention of the German chemists who had been consulted with reference to the subject was then directed to an oil made from our Indian corn.

After a careful examination of the subject, the chemists have reported that the Indian-corn oil did not lose its clearness when subjected to the cold, like linseed oil, and that it was far superior in every respect to the linseed oil, and, owing to its cheapness, could be profitably used in the manufacture of soft soaps and for other purposes.

Experimental importations have been made, the orders having been placed with certain Chicago houses.

The oil being intended for the same use as linseed oil, the importers naturally supposed that it would be subjected to the same duty—4 marks per 100 kilograms; but the German customs authorities have assessed the duty at 9 marks per 100 kilograms, on the ground that corn oil is not specially provided for in the German tariff, and that hence it must be classified as an oil for industrial use dutiable at 9 marks. This classification will, it is said, practically prohibit the importation of an article which promised to become an important article of export with us.

Importers interested in this matter hope to have the corn oil specially mentioned in the new tariff, and at the same rate as linseed oil. If they are successful, Indian-corn oil will certainly supplant linseed oil in this market.

W. H. EDWARDS,

Consul-General.

UNITED STATES CONSULATE-GENERAL,

Berlin, November 23, 1891.

THE SUNFLOWER INDUSTRY OF RUSSIA.

REPORT BY CONSUL-GENERAL CRAWFORD, OF ST. PETERSBURG.

EXTENT OF THE INDUSTRY.

The sunflower as a garden plant has been known all over Russia for many years, but only in certain districts has it been cultivated on a large scale as an industry. The first cultivation of sunflower seed for mercantile purposes began in 1842 in the village Alexeievka, district of Berutchinsk, government of Voronezh, by a farmer named Bokareff, who was the first to obtain oil from the seed. Bokareff soon found many followers among his fellow-farmers, and the village of Alexeievka soon became the center of the new industry. The government of Voronezh is even now the chief district in European Russia for the growing of the sunflower. Besides the district of Berutchinsk, this plant is cultivated on a large scale in the districts of Novokhopersk, Ostrogoshk, Bobrovsk, Valouisk, and Korotoiaks. From the government of Voronezh the cultivation of sunflowers spread to the adjacent governments of Tambov and Saratov, where there are large fields cultivated with this plant, particularly in the latter government, where there will be found extensive districts owned by the town of Saratov itself. Furthermore, the people of the province of the Don and the governments of Simbeersk and Samara are more or less engaged in this trade; in fact, in the entire southeast of Russia the sunflower furnishes a prominent product of the farm.

The following table will show the total area applied for sunflower cultivation in 1886–'87 as compared with 1881–'82:

Governments.	1881–'82.	1886–'87.
	Acres.	*Acres.*
Bessarabia	1,792	2,646
Kherson	4,287	4,156
Taurida	1,306	216
Yekaterinoslav	5,184	2,880
Province of Don	21,322	14,720
Poltava	4,719	12,879
Kharkov	4,690	14,107
Voronezh	116,680	272,600
Kiev	980	1,981
Podolia and Volhynia	1,744	2,995
Koorsk	16,086	40,885
Chernigov	295	344
Orel	397	197
Tambov	15,157	66,304
Toola and Riazan	84	7,757
Penza	613	2,586
Simbeersk	831	2,600
Saratov	149,364	226,420
Samara	19,780	25,677
Oremboorg	2,575	1,544
Total	367,886	703,494

Two kinds of sunflower are known in this country—one with small seeds used for the production of oil, and the other with larger seeds consumed by the common people in enormous quantities as dainties very much as the people eat peanuts in the United States. In the district where the seed is cultivated on a large scale the plant has been continually grown on the same soil for many years in succession, thus producing a disease of the plant called *Puccinia diocoidearum*. Owing to this disease, the sunflower crops have been rather poor in the government of Voronezh for the last ten years, and the cultivation of it has therefore abated somewhat in this locality.

The sunflower seed is used principally for obtaining sunflower oil, which, owing to its nutritious qualities, purity, and agreeable flavor, has superseded all other vegetable oils in many places of this country.

In general the cultivation of the sunflower in Russia is considered to be very profitable. At the average yield of 1,350 pounds per acre, and at the average price of 1½ cents per pound, the farmer receives an income of about $20 per acre. This income can be increased in those districts where the grower himself is engaged in producing the oil from the seed. However, oil mills are very rare in the villages, the farmers selling their seed to the oil-producers. In the seed-growing district of Saratov there are only thirty-four village oil mills producing oil worth $40,000 annually, whereas in the town of Saratov $450,000 worth of oil is manufactured annually. The substance remaining from the oil manufacture, or the sunflower cakes, being used as cattle food, is also a valuable product. These cakes, however, have a comparatively small demand in Russia and are largely exported to foreign countries, principally to Germany and England. The government of Saratov, for instance, exports about 2,000,000 pounds of sunflower cakes to different countries, where some more oil is pressed out of them before being used for cattle food.

The sunflower cakes form one of the principal items in the export of Russia.

The sunflower shells, being used for heating purposes, form an article of trade in several districts. The seed cups are not wasted, but are used as food for sheep.

The peasants in the government of Tambov are increasing the cultivation of the sunflower, owing to the following reasons: There is a steadily increasing demand at home and abroad for the seed, thus making the industry a profitable one, especially as Russia is the chief source of supply; through the cultivation of sunflowers it is possible to adopt a more extensive mode of agriculture; it is proved that a given plot of land used for the growing of sunflowers has yielded $20, as against the usual $10; the soil became very porous and better prepared for the rotation of crops.

The cultivation of the sunflower is almost entirely in the hands of the peasants, and therefore the industry is not conducted on scientific or commercial principles.

SOIL, SUN, MANURE, ETC.

The stalk very often being 3 inches in diameter and about 8 feet long, sometimes bearing many heads, some of which are more than a foot in diameter containing about 2,000 seeds, it is evident that in order to grow this plant profitably it is absolutely necessary to have a very fertile soil, which at the same time must be very compact and sufficiently deep to sustain the stalk with its roots. The best soil for this purpose is mold or black land mixed with sand. On meager soil the seeds grow flat and small, whereas on stout soil round, heavy, and rich seeds are obtained. Soil where potatoes and peas have been profitably cultivated without artificial manure may be adopted for the growing of the sunflower. It also thrives well on newly worked fields if the soil is not composed of too much clay and sand. On clay and sandy soil the sunflower does not thrive, as it can not retain the moisture absolutely necessary, nor are the roots able to sustain the weight of the fruit. Observations have proved, however, that the sunflower can be cultivated on porous mold formed from dried marshes, only the soil must be free of acid and must be sufficiently moist. On limpy ground the sunflower succeeds very satisfactorily, on chalky ground it is poor and short grown, but porous, limy soil is the most practicable for its cultivation. Owing to the huge size of the plant and the great height of its stalks, it is necessary to protect it from storms; therefore, elevated grounds must be avoided. On hilly but sheltered fields the sunflower succeeds well, but much better on level ground. On the other hand, fields too much sheltered and shaded must be avoided, as the plant needs not only great warmth, but the direct support of the sun, a fact indicated by the flower itself in turning its face constantly to the sun while growing. On low land near to the river banks the sunflower grows beautifully, although the rank growth of weeds along the river banks greatly increases the labor of cultivation. In general it can be said that the warmer and moister the atmosphere and the stronger and longer the effect of the sun on the plant, the richer and better are the seeds.

Manure plays an important rôle in the cultivation of the sunflower. The plant does not bear fresh manure, and particularly horse manure. On ground enriched with such manure the plant grows very rapidly, but bears very little fruit. Should there be no rich soil suitable for this industry, the fresh ground must be manured with very old manure in the autumn, and the ground must be plowed properly and carefully mixed with the manure in order to let the latter be thoroughly decomposed before the following spring. The safest way to obtain a profitable crop is to sow the second spring after the fresh manuring, as is the rule in the greater part of the government of Tambov.

The sunflower requiring a great deal of moisture, it is very essential to guard the ground from unnecessary airing; therefore, it is advisable to plow the soil in the autumn. In plowing the ground no large lumps must be left therein, as the large roots of the plant growing about a foot deep must not be prevented from freely spreading in the porous soil. On the other hand, it would be unprofitable to prepare the soil too fine, as such ground, after

the first rain, will form a hard surface, preventing the air and water from passing through it. This rule must be followed, particularly in districts of hot, black earth, where the heat sets in early in the spring.

In the spring, when the soil is sufficiently winnowed, warmed, and properly worked, the seed must be sowed carefully and the ground properly harrowed. In order to retain the moisture, it is advisable to have the ground rolled after the harrowing. This is very important, as it has been proven that ground worked thus yields about 1,600 pounds, as against 1,000 pounds, of seed per acre. The sunflower thrives after other crops, such as rye, oats, wheat, and grass, if the soil is not too much exhausted. The flower succeeds particularly well after crops that leave the ground porous and free from weeds. In the government of Voronezh the sunflower succeeds beautifully after melons.

SOWING AND CULTIVATION.

As to the sowing of sunflowers, there are two views among the Russian farmers. Some sow it after wheat and rye, and this is to be preferred, while the others sow it after hyrse, oats, and buckwheat if the latter is cut off early in the autumn. To sow after buckwheat, however, has proved to be much less profitable, as a chemical analysis has shown that both these plants take potassium from the soil—the buckwheat 42 per cent and the sunflower about 50 per cent—thus proving scientifically that this way of cultivating is to be avoided. The sowing of sunflowers after rye on less rich but fertile soil is a very successful and rational mode. Should this system not be practicable, it is advisable to sow the sunflower after clover. For this purpose it is necessary to let the grass grow a little after the second clover crop. The ground should be plowed and left for the next spring, when the seed should be sown without replowing the ground.

In black-lands districts, where this plant is cultivated largely, it is considered profitable to sow in fields which, after having been used for five to seven crops, have had a rest of a couple of years. These fields yield a good crop without being remanured. To sow wheat on the same ground directly after the sunflower has proved very unsatisfactory, although the wheat grows very rapidly after the sunflower, but it is choked by the sprouts of the latter. Therefore, after the sunflower crop the field should be left idle for a year. In the spring, when the sprouts have half grown, the ground should be plowed, and thus a very good vegetable manure is produced. Another successful way is to allow sheep and cattle to pasture on the fields for one season.

The Russian farmers in the south do not believe in the change of seed and generally sow the sunflower many years in succession on the same ground so long as the crops are profitable. In the government of Voronezh the belief is entertained that the crops will be profitable seven years in succession; after this they sow buckwheat and then, after a year's rest, rye. This method has been shown to be very severe, greatly injuring the land and producing in the end bad crops.

Of the different kinds of sunflower seed in Russia—some white or gray, some brown with white or gray stripes, some quite black, dyeing the cells a dark violet color—the gray and striped seeds are preferred, as they appear to be much cleaner and handsomer, and therefore command a higher price, especially for the purposes of raw consumption by the common people. The black seed, owing to its dark coloring matter, is generally avoided. All these seeds appear in the market divided into two sorts. The larger kind, containing less oil, is the cheaper; the smaller, producing more oil, is sold to the oil-manufacturers and is much more expensive. The latter seeds are flat and oval, like coffee beans, and are considered the best for this industry. Good seeds must have a pleasant taste, a fresh smell, and good weight.

The main condition for a profitable cultivation of sunflowers is to choose ripe seeds and carefully preserve them during the winter. For this purpose the very best seed cups are taken in the autumn, which are hung by their stalks in a dry place where the sun can not reach them. In the spring the seeds are shaken out and dried in ovens and made ready for the sowing. Seeds thus prepared give a very good plant.

The sunflower should be sown very early in the spring, even before the oats, or as soon as the snow has melted. It has been shown that the sooner the sowing is done the better is the seed obtained. In many districts the sowing is made in the autumn, but this must be done so late that the seeds will not sprout. In the district of Voronezh the seed is sown at the end of October. The ground must be plowed rather deep, but care must be taken that the seeds are not buried more than about 2 inches deep, that the seeds may sprout as soon as possible, the soil in the spring being warmed only on the surface. Many farmers moisten the seeds before sowing.

The sunflower is sown either broadcast or in rows; in the latter case the seeds should be placed about 6 inches apart. The sowing of the seed broadcast, being the more quickly performed, is generally favored on large farms, especially where the farmers have not sufficient help. Of the two methods—sowing in the fall and in the spring—the latter seems to produce the most satisfactory results. Seed sown early, even on poorly prepared ground, does much better than when sown late under the best conditions of soil. Although the sowing in rows requires more time and more work at first, and consequently is more expensive, it has great advantage over the broadcast method. The weeds, for example, which should be carefully kept down or the crop will be ruined, can be removed by means of horse plows and horse cultivators and hoes, while in broadcast sowing they can only be removed by hand. Then, too, the seeds ripen much more quickly in rows, the wind and the sun having freer access thereto.

If American methods were employed, such as sowing by machinery, the expense of sowing would be greatly reduced and the seeds would be planted regularly and covered evenly and at the proper depth, making it comparatively easy to keep the fields clean of weeds, and thus increasing enormously the profits of sunflower-farming.

The result of chemical analysis shows that the green plant, without roots, and the head contain the following percentage of ash:

Period of growth.	Green plant.	Head.
	Per cent.	*Per cent.*
Second	1.38	1.55
Third	1.16	1.19
Fourth	1.1	0.94
Fifth	1.16	0.65

Ten parts of ashes of the plant contain—

Component parts.	Period of growth.			
	Second.	Third.	Fourth.	Fifth.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Potassium	52.39	57.46	53.06	52.45
Natrium	0.8	0.07	0.2	0.16
Lime	15.25	10.19	14.57	15.3
Magnesium	7.61	5.57	7.52	6.85
Peroxide of iron	0.21	0.11	0.13	0.13
Phosphoric acid	5.86	8.48	6.84	7.06
Chlorine	10.66	11.63	10.47	9.58
Silicious earth	2.79	2.35	3.31	3.36
Sulphuric acid	4.43	4.14	4.08	4.61

One hundred parts of ashes of the heads contain—

Component parts.	Period of growth.			
	Second.	Third.	Fourth.	Fifth.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Potassium	55.8	42.43	45.8	50.74
Natrium	1.9	1.65	.....	.....
Lime	9.67	18.59	16.66	13.92
Magnesium	4.13	5.1	6.61	5.8
Peroxide of iron	0.24	0.17	0.23	0.18
Phosphoric acid	17.98	19.5	17.41	19.15
Sulphuric acid	3.84	4.98	5.12	4.13
Chlorine	6.04	5.19	7.16	5.12
Silicious earth	0.4	2.39	0.93	0.96

One hundred parts of ashes of the seeds contain—

Component parts.	Saratov seed.	Kharkov seed.
	Per cent.	*Per cent.*
Potassium	21.56	33.63
Natrium	5.42	5.52
Lime	11.69	15.13
Magnesium	10.41	5.77
Peroxide of iron	4.56	0.42
Phosphoric acid	37.27	41.34
Sulphuric acid	3.91	3.17
Chlorine	0.38	0.38
Silicious earth	4.74	0.16

From this analysis it appears that in one ripe plant of medium size in green condition there are the following principal substances:

Parts.	Potassium.	Lime.	Phosphoric acid.
	Per cent.	*Per cent.*	*Per cent.*
Heads with seeds	1.7	0.46	0.64
Leaves	3.81	2.06	0.54
Stalks	6.23	0.9	0.51
Whole plant	11.74	3.42	1.69

Again, if the number of plants could be estimated, as by sowing by machinery it would be easy to calculate, the proportion of stalks and leaves to be left on the fields in order to furnish sufficient vegetable manure for the next crop could be ascertained. It has been estimated that the stalks and leaves of a single crop are sufficient to manure the field for five or six excellent sunflower crops. If, therefore, four-fifths of the stalks and leaves were gathered for fodder, leaving one-fifth uncut and evenly distributed, the fields, it is thought, could be made to produce good crops almost indefinitely.

The huge heads, the thick stalks, and the large leaves of the sunflower would lead one scientifically to conclude that it would greatly impoverish the soil on which it is extensively grown, but the practice of many years proves to the contrary. An experienced Russian farmer, Mr. Taratchkoff, asserts that, although it is generally believed that all oil-producing plants greatly exhaust the land, the sunflower seems to be an exception. He says that he has, for experiment, sown winter wheat and other corn many times after the sunflower and other plants, and the crops were always better after the sunflower. Therefore, he maintains the view held in the village of Alexeievka that the sunflower not only does not exhaust the land, but that it actually enriches it. The same view is entertained by other experienced farmers in the government of Saratov and Voronezh. One, Mr. Pereleshin, says that wheat especially grows very much better after a sunflower crop. For instance, on the large steppes in the government of Voronezh the sunflower is sown alternately with wheat and flax, the crops of which are always very abundant; whereas, if wheat and flax are rotated, or, if either is sown in succession on the same ground but without being preceded by the sunflower, the crop will soon be unsatisfactory. The sunflower has a beneficial effect on wheat and other cereal crops following, owing to the long, strong roots of this plant reaching the lower depths of the subsoil, making it porous, and thus distributing the richness of the earth below even better than by plowing. The numerous large leaves of this plant, by shading the ground, retain therein the moisture and at the same time prevent the spreading of weeds. The sunflower, like all large-leafed plants, increases the fertility of the land. The large roots of the plant, absorbing the water, soon decay in the earth and leave, according to a careful estimate, about 2,000 pounds of manure per acre in the soil. A peculiarity of the plant is that the leaves remain

always green even after the seeds are quite ripe. It is claimed that the sunflower cultivated in low, unhealthy, swampy, or malarious districts prevents spreading of miasmatic diseases.

Good, well-aired seeds sprout and reach the surface in about eight days under favorable conditions, the first appearance of the sprouts being very similar to those of the cucumber. Seeds dried in ovens or corn kilns do not sprout so readily, but the plant is stronger and more reliable. In a week or two after the appearance of the sprouts it is necessary to pull them out in places where they are too thick, bearing in mind that the space between the plants should be about 1½ feet. The field, when the plant is about 6 inches high or when it has four leaves, should be weeded, a very essential part of the labor of sunflower-farming. If the ground is properly prepared, there is seldom more than one weeding necessary. When the plant has attained a height of about 3 feet, the offshoots should be cut away, leaving only the main stalk with four or five flowering heads, thus favoring the better and more rapid development of the seeds. No more care is needed until the plant is ready for harvest.

HARVESTING.

The harvest time of the sunflower can scarcely be fixed, as it depends not only upon the climate, but also upon the nature of the soil and the exposure of the plantation. In the south and southwest of European Russia it ripens about the middle of September, further north at the end of September or beginning of October. In the government of Voronezh it ripens about the middle of August under very favorable conditions. But even in this district the reaping depends greatly on the condition of the ground. On sandy soil it ripens about the middle of August, on black-earth lands at the end of August, and on lower grounds still later. From this it may be seen that the sunflower, wherever it grows, ripens later than any other corn plant, a very important fact in agriculture, as its harvesting does not interfere with the harvesting of other crops. When the sunflower is overripe, its yellow flowers wither, the stalk and the seed cup from the top become gray, all the leaves of the flower covering the seeds fall off, and the seeds get hard, shoot out from the seed cup, and crack open. At this time the plant should be well guarded from the birds or the overripe seeds will soon be destroyed by them.

On small farms the sunflower is harvested gradually; the ripe heads are cut off first, leaving the others in the field to ripen. The flowers are spread out on the ground for the day and are placed under shelter for the night until quite dry, thus giving an excellent quality of seed and of oil. The stalks are cut off after they are thoroughly dry and stored away in piles to be used as firewood. On larger farms this method of harvesting would be too tedious; therefore, where the sunflower is cultivated on a large scale the plant is cut off at the very root of the stalk after most of the flowers are ripe and piled, seed upwards, in the same way as hemp till quite dry. Some large farmers cut the seed cups off, but leave them on their own individual stalks, where they are allowed to remain from three to ten days until quite dry.

Both of the latter methods of harvesting have very serious objections as compared with the first mentioned. By either of the two methods last named it is almost impossible to obtain a good quality of the seed, as there will always be a considerable number of unripe seeds in the lot, thus damaging the quality of the oil; nevertheless, these are the methods most generally adopted by the large farmers, as their imperfect methods of farming do not enable them to handle such large crops without a sacrifice of quality. The same criticism obtains, also, in the methods of harvesting wheat, rye, and other cereals. In comparing the two methods of harvesting most generally adopted by the large farmers, it will be seen that in cutting the plant at the root the field may be cleared promptly, whereas when the stalks are left the entire field must be gone over twice in order to clear it. Then, too, the stalks left in the field form a regular forest, greatly interfering with the work of carrying off the seed cups. On the other hand, this method has the advantage that the seed cups, being left on their own stalks, are dried quicker and better than those stored in piles, and that in carrying away the heads without the stalks no seeds are wasted. The drying and airing of the sunflower in large heaps is to be avoided. The heads, when piled away, tend to destroy the seed by their own weight, and the absence of fresh air favors mildew and decay. The mode of drying the seed in the open air generally adopted in Russia is evidently unsatisfactory. The head containing much moisture does not dry well, but only withers under the influence of the air and the sun and is apt to be ruined by the fall rains; therefore, the Russian farmer is often pleased to get even a half crop of oil from a full crop of seed. The plan recommended, but not yet generally adopted, is to erect drying sheds for the proper curing of the seed. This would be done at once in the United States if sunflower-cultivation should become a prominent industry there.

When the flower is thoroughly dry, the work of thrashing should begin at once. The small farmer shakes out the seeds by means of a small stick, with which he whips the seed cups one by one. On the larger farms sunflower-thrashing is performed by means of the flail in the same way as the thrashing of grain; but this mode is not advisable, as the shells are broken, thus allowing the air to reach the kernel, which soon becomes bitter from exposure. A better way is to spread the seed cups with the seed upwards on the floor, on top of which should be laid another row, and so on till the heads are about 2 feet thick, thus protecting the seed grains from the flail. In adopting this latter mode there is little danger of the shells being split. After the thrashing is finished the seeds are screened, generally by the shovel-and-wind method, but in some cases by means of American or German fanning mills. The seed is then dried very thoroughly in the sun or in kilns and sorted by means of screens, separating the small from the large kernels.

Good soil, after three crops of wheat or rye, will yield about 2,000 pounds of seed per acre, furnishing about 250 pounds of oil. The seed that is used as a peasant delicacy grows very much better than the oil seed,

yielding as high as 2,700 pounds of seed per acre. The following table will show this difference per acre in the average of the four years 1881–'84:

Years.	Oil seeds.	Edible seeds.
	Pounds.	*Pounds.*
1881	1,070	1,700
1882	500	900
1883	760	1,500
1884	1,300	1,550

The above table would give in general an average in these years of 907.5 pounds of oil seed and 1,412.5 pounds of edible seed to the acre.

USES OF THE SUNFLOWER.

Oil.—As before mentioned, the sunflower is cultivated principally for the oil. If the cultivation is made with care, and if proper precautions are taken in drying, cleaning, and pressing, sunflower oil is equal to the French table oil in color, flavor, and taste. At first sunflower oil did not meet public favor in this country, but later on, owing to its good qualities and cheapness, it took the place of the oil of poppy seed; but for a long time hemp-seed oil competed with it, owing to the fact that the lower classes of this country, who for many years had used the hemp-seed oil in the preparation of various dishes, and who had long learned to relish it, were loth to give it up. Now, however, public opinion has changed, and sunflower oil is preferred to all other table oils by the masses in Russia.

After the seeds are sorted, the smaller go to the seed mills and the larger are sold to dealers for the use of the people as a dainty, just as peanuts are consumed by the people in the United States. The consumption of sunflower seeds in Russia is enormous, always eaten raw, forming a very extensive trade in the Empire.

Fire material.—The sunflower stalks gathered from the fields and dried in piles have entirely replaced firewood; in fact, these stalks are preferred even to pine wood, producing a quick and hot flame fire. About 2,000 pounds of such firewood are gathered from an acre of land, thus adding a great boon to a district where wood is scarce. Sunflower shells are also used for heating purposes, not only in private houses, but in large factories as well. They are burned in ovens specially prepared for their consumption.

Fertilizing.—The ashes of the sunflower contain a high percentage of potassium. The experiments of Hermbstedt have proved that 1,000 pounds of dried stalks yield 57.2 pounds of ash, and that from 1,000 pounds of ash 349 pounds of the best potassium are obtained. According to the analysis of Mr. Ludogovsky, the ash of the sunflower grown in the governments of Saratov and Voronezh contains about 30 per cent of potassium. He asserts, at the same time, that if the soil is very rich the plant will take up 50 per cent of potassium. An entire ripe sunflower plant without the root contains

about 22 grams of mineral substances, whereof about 12 grams are potassium. The farmers in Russia sell their ashes to the soap works for a very low price, instead of using them for the field.

Cattle feed.—Sunflower cakes are looked upon as the best food for cattle in this country; they are considered better, even, than hemp or rape seed cakes. According to chemical analyses, the sunflower cakes from the government of Saratov contain: Azotic substances, 42.31 per cent; oil, 14.71 per cent; and ashes, 5.12 per cent. Besides cattle, fowl are fed with sunflower cakes; and horses fed on them are made strong, sleek, and sprightly. The dried seed cups, if ground, are used in many districts as food for cattle, and particularly for sheep, with great success.

SUNFLOWER DISEASE.

The sunflower, like all other plants, is sometimes afflicted with a disease. This was the case particularly in 1869, when large plantations were greatly damaged in this way. At that time the attention of a Russian botanist, Veronine, was drawn to this epidemic, and he found that the plant was attacked by a parasite which he named *Puccinia helianthi.* This parasite is in every way apparently like the *Puccinia graminis* usually found on all corn plants; however, it does not move to other plants, living and developing solely on the sunflower, thus proving a distinct species. The following are the symptoms of the disease: In the middle of the season, when the plantations are in full development, the plants suddenly begin to wither, the leaves droop, the heads shrivel and bend towards the ground and cease turning after the sun; the whole plantation looks dark brown, as if it were burned; at this time the root of the plant is covered with blight, which soon affects the stalk and makes it quite hollow; at the same time the blight appears on the lower leaves of the plant, where it develops, and, moving to the upper leaves, covers the stalk and, reaching the head, destroys the plant altogether if the seeds are not quite developed. It is noticed that the sooner the parasite appears the greater the destruction. But when the flower of the plant is fully developed the effects of the disease are not so serious, and one can expect under such a case to have a fair crop.

The Russians have found that the best means of destroying the parasite is to burn everything left in the field after the seed is harvested and spread the ashes uniformly over the ground, as it is well known that parasites are destroyed by lime or ashes. Another treatment is to sow wheat, rye, oats, or clover in the field for a few years and sow the sunflower in other fields some distance removed. Another method is to hasten the early development of the plant, thus getting it so well advanced that the coming of the parasite will be too late to do much damage. Again, fall sowing of sunflower seed is effective against the parasite, as the crop is much earlier. The sowing of seeds in rows accelerates the ripening of the plant and helps to get it out of reach of the parasite. Rolling of ground after sowing favors the success of the plant. Lastly, a very sensible and effective means of guarding

against the sunflower disease is to change the seed from time to time. It has been found that seed brought from a neighboring district has produced satisfactory crops even in the districts where the sunflower is affected by the parasite.

OIL-MAKING.

The seed, being brought to the oil mill, is thoroughly cleaned and sorted. They are passed under millstones especially prepared for this purpose, in order to release the seeds from the shells. After this the seed is properly dusted and put under a press and later into a mixer, where the seed is turned into a compact mass very much like paste, which passes into vessels heated by steam. From these vessels the paste is taken out and wrapped in a thin web made of camel hair and put under a press, by which the oil is squeezed out and conducted by pipes into cisterns.

The oil mills introduced into Russia in 1846 were driven by manual power; only in 1855 the first steam oil mill was built by Mr. Papoushine.

The greater part of the existing oil mills in Russia were built about 1880, principally in the governments of Saratov, Voronezh, and Koorsk. The total number of oil mills found in Russia in 1888 was one hundred and four. From this number eighty-five were solely applied to obtaining sunflower oil. In twenty-four of these mills steam is used and in the others only manual power. The largest mill, producing 1,500,000 pounds of oil annually, is owned by Mr. Louboshnikoff, at Saratov. The principal oil mills producing more than 20,000 pounds of oil annually are the following:

Name.	Production.	Value.	Hands.
	Pounds.		
Louboshnikoff	1,500,000	$108,000	50
Shoulyguine	60,000	43,000	22
Naoumoff	60,000	42,000	30
Tchougounoff	50,000	35,000	20
Shelkovnikoff	45,000	33,000	25
Artamonoff	40,000	27,000	25
Stepanoff	35,000	25,000	24
Ivanoff	30,000	22,000	20
Pirogoff	30,000	21,000	14

The approximate quantity of oil produced annually by all mills located in the different governments is about 20,000,000 pounds, valued at $1,000,000, as may be seen from the following table:

Government.	Quantity.	Value.
	Pounds.	
Saratov	15,000,000	$700,000
Voronezh	4,000,000	230,000
Orlof	600,000	40,000
Tambov	200,000	13,000
Koorsk	50,000	3,000

It is almost impossible to form a fair estimate of the total quantity of oil produced in the several governments, this industry being divided among thousands of small farmers and peasants.

As mentioned before, there are two kinds of sunflower seed known in the market—the edible seeds and the oil seeds used exclusively by the oil mills. Both these kinds are divided into Saratov and Poland seeds. Although the former is not as large or as handsome as the Poland seed, it contains much more oil.

The prices for the sunflower seeds have been gradually declining for the last seven years. At Saratov, for instance, the seed in 1883 was quoted at 2½ cents per pound and was sold at 1½ cents in 1889. The price of the oil, being entirely dependent on the state of the seed market, and thus fluctuating accordingly, has been greatly decreasing for the past six or seven years. In Saratov, in 1883, a pound of seed brought 3 cents, and in 1889 the same seed was quoted at 1½ cents. The same decrease has been experienced at the other markets, as, for instance, at St. Petersburg and Voronezh.

There are two kinds of oil obtained from the sunflower seeds. The better kind is sweet and more expensive, the inferior having a bitter taste. The difference in the price of these two qualities is about 1 cent per pound. The oil remaining from the oil production, or the waste, and not used as human food, is applied exclusively to certain industries.

EXPORTS.

Oil.—The sunflower oil being largely consumed at home, comparatively little of it is yet exported, as will be seen from the following table of exports:

Year.	Quantity.	Value.
	Pounds.	
1883	300,000	$15,000
1884	9,200	840
1885	1,490,000	170,900
1886	13,500	1,060
1887	90,000	7,100
1888	30,500	1,940
1889	37,000	3,000
1890	73,000	3,900

Cakes.—The export of sunflower oil from Russia, as seen from the above, is very irregular and rather insignificant as compared with the export of sunflower cakes, which are in great demand in foreign markets. Until 1889, however, the amount of sunflower cakes exported has not been given separately, but together with other cakes. According to the estimate of the last two years, the total export of sunflower cakes from Russia was 96,000,000 pounds in 1889 and 80,000,000 pounds, valued at about $700,000, in 1890. Besides Great Britain and Germany, Denmark and Sweden import great quantities of Russian sunflower cakes; in fact, the export to Denmark in the last two years has been even larger than to Germany.

The prices of sunflower cakes at the places of their production are lower than at the seaports. Cakes sold at Saratov, for instance, at half a cent per pound are quoted at 1 cent at Reval and Riga.

It may thus be seen that the sunflower is capable of introducing a new element into the agriculture of the United States, and one that promises to become an important industry.

J. M. CRAWFORD,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, December 15, 1891.

DESULPHURATION OF PIG IRON BY MANGANESE.

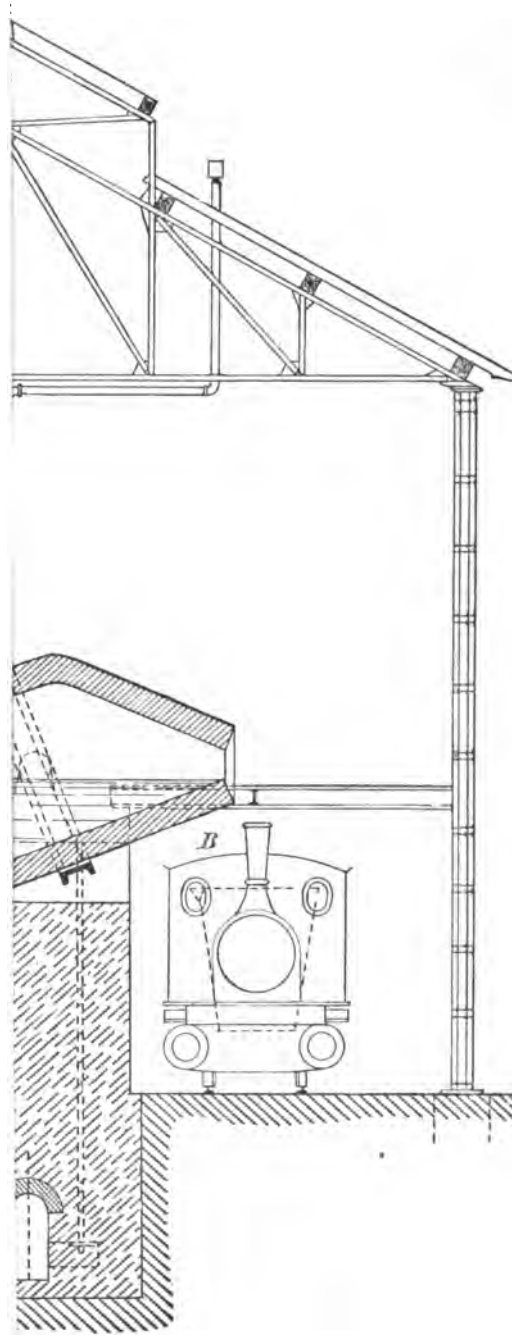
REPORT BY CONSUL-GENERAL MASON, OF FRANKFORT.

At the recent meeting of the Iron and Steel Institute in London there was presented by Mr. J. Masenez, a German engineer, a report describing concisely the results which have been attained in desulphurating raw iron direct from the blast furnace by treatment with manganese at the works of the Hoerde Mining and Furnace Company, near Dortmund, in Germany. This report and the discussion which it elicited formed by far the most original and interesting feature of the proceedings at that meeting, and Mr. Masenez received a unanimous vote of thanks for his valuable contribution. In view of the wide application which this process may have in the iron and steel manufacture of the United States, some account of its theory and practical application is herewith submitted.

The process is based on the well-known chemical affinity between sulphur and manganese when both are in a fluid condition. This affinity was demonstrated more than thirty years ago through analyses of manganic slags at the mining school in Loeben, and it has since been utilized to some extent at certain furnaces in the Austrian provinces of Styria and Carinthia.

But it remained for the managers of the furnace company at Hoerde, in Westphalia, to reduce the application of this principle to a system so simple, cheap, and effective that it accomplishes at a trifling cost not only the desulphuration of the pig iron to the point of readiness for immediate conversion into steel by the Bessemer process, but secures for the iron thus treated a valuable uniformity of texture in respect to its admixture of silicon, phosphorus, and manganese, and finally leads to an important saving in fuel and fluxing material by enabling the blast furnace to be worked at lower temperatures than have been hitherto consistent with good practice when working sulphurous ores or coke. The process itself is a development of the well-known "mixing operation," which is already practiced to some extent in Great Britain and the United States. Its theory is concisely stated in the proposition of the Hoerde company, submitted to the patent bureau at Berlin:

(1) When sulphide of iron is melted together with ferromanganese, or when molten sulphide of iron is mixed with molten ferromanganese, the sulphur unites with the manganese,



NG APPARATUS.

forming a scoria of sulphide of manganese, leaving the iron practically free from sulphur. The same result follows when molten sulphurous iron is mixed with molten manganiferous iron. Experiment has shown that raw iron containing as high as 3 or 4 per cent of sulphur retains, after proper treatment with manganese, not more 0.13 per cent of sulphur, while the resulting scoria may contain as high as 20 per cent of sulphur and 30 per cent of manganese.

(2) When this scoria is mixed with a basic earth, notably limestone, and the mixture reduced by melting, the sulphur forsakes the manganese and unites with the lime, leaving the manganese restored to its original purity and capable of being again used for purifying iron from sulphur.

In practice this theory, as will be hereinafter shown, has been simplified in some important respects at the works in Hoerde and the cost of its application thereby greatly reduced. The ores used by that company are various in character and origin, the principal ones being Luxembourg "minette," 40 to 42 per cent of iron; native black-band ores, about 50 per cent of iron; puddle slags from England, Belgium, Westphalia, and the Saarbrück region, which contain from 54 to 56 per cent of iron, with from 2 to 4 per cent of phosphorus in the form of phosphoric acid; pyrites and other waste material from the soda and acid factories; and, finally, the Nassau manganic brown ironstone, containing some iron and from 8 to 12 per cent of manganese. These ores are mixed in such working proportions that the pig iron, when it comes from the blast furnace, shall contain from 1.5 to 1.7 per cent of manganese, which has been found sufficient to effect a thorough desulphuration of the iron.

The works at Hoerde comprise three sections or departments, which are located contiguously and connected by railway tracks, viz, a group of four blast furnaces with blowing apparatus, the desulphurating plant, and the Bessemer basic steel works.

Of these three sections the first and third present no peculiarity. It is the desulphurating process with which we are at present concerned.

In a separate building of cheap construction, located midway between the furnaces and steel works, the desulphurating apparatus is established. Its general construction is roughly indicated by the drawing herewith.

Upon a strong foundation of masonry is mounted the iron reservoir, or "mixer," of either the "Bessemer-Birne" or the "Johns" pattern—without *tuyères* in the bottom—which has a capacity of 70 tons of molten iron, though a larger form, capable of holding 100 or 150 tons, is recommended as in all respects preferable. The mixer is lined with two layers of fire brick, similar in nature to those used in blast furnaces, and is hung on trunnions, so that the vessel may be readily decanted by a hydraulic power of 8 atmospheres.

When the blast furnace is tapped, the iron is run into large ladles, each having a capacity of 10 to 11 tons of metal, and is mounted on a strong railway truck, to which is attached, when used, a small locomotive of the simplest pattern. The ladle, thus mounted and filled, is run along the rails to the point A in the desulphurating house, where its contents are poured into the mixer. This process is repeated until the latter is filled. As the molten iron in the mixing vessel gradually cools, there rises to the surface a scum of dark scoria

covered with bubbles. This is the sulphide of manganese formed by the reaction of the manganese and sulphur in the iron. Twenty minutes after the last ladleful has been poured into the mixer the desulphuration is complete, and thenceforward the operation is kept up throughout the week, pouring into the top of the mixing vessel charge after charge of sulphurous iron from the blast furnace and drawing out desulphurated iron from the nozzle at the other end. The railway ladles are hung also upon trunnions, so they are easily decanted by a geared windlass operated by two men. Having thus discharged its load of sulphurous iron into the mixer, the ladle is run down a short incline and switched by another track to the point B, under the nozzle of the vessel. This is then decanted by hydraulic power, the ladle is filled with desulphurated metal covered with floating sulphide of manganese, and is then run along the rails to the steel works, where the ladleful forms a charge for the converter. The heat created or liberated by the reaction of the sulphur and manganese in the mixer is sufficient to keep the molten bath fluid for a long time, and thus there is available for the converters a constant, elastic supply of metal in condition to be blown into steel, independent of the exigencies which may govern the tappings of the furnaces. When several blast furnaces are thus worked together and one or more of them is running badly, this independence of action between furnaces and converters is often of great importance.

Theoretically, it was proposed that the manganic slag should be removed from the surface of the molten mass while in the mixer; but it has been found in practice that while there it is too hot and liquid to be conveniently managed, so it is left to cool during the final transfer from the mixer to the steel works and is removed from the surface of the ladle charge with a large perforated skimmer just before it is poured into the converter. In case any accident at the steel works should require the bath to be retained a long time in the mixing vessel without the addition of any fresh hot iron from the furnace, a few sticks of wood thrown in will create a blaze that prevents too rapid cooling; but this recourse is only for emergencies and has no part in ordinary practice, the heat generated by the reaction already mentioned being fully adequate for the purpose. In fact, the gradual cooling of the contents of the mixer is an important element of the process.

Thus the operation goes on at Hoerde, the mixer being entirely emptied each Saturday night, and, if necessary for the repair of its lining, it is cooled by injecting water therein and the repairs made in time for the resumption of work on Monday. This violent cooling of the vessel is, of course, injurious to the lining, and, as such repairs are necessary once in three or four weeks, it is a great, and in the end an economical, convenience to have two mixing reservoirs mounted side by side, so that one may be slowly cooled by natural means while the other is in use. It is only the inner layer of fire brick which is attacked around that part of the interior which comes most in contact with the floating scum of manganic sulphide, so that only a small part of the lining usually needs to be renewed.

The cost of the whole desulphurating plant, including building, hydraulic power, etc., for one 100-ton mixer is, in Germany, about $12,000, or with two mixers of the same capacity, say $16,000. At Barrow, in Great Britain, where the mixing process is employed in order to secure uniformity in the metal for direct steel-making, Sir Lowthian Bell estimates the cost of using the mixer at not more than a penny per ton, while melting cold pig iron in a cupola for steel-making costs, in fuel and labor, half a crown, or about 60 cents, per ton. The process is, of course, equally applicable to making iron in ordinary pigs, the only difference being that, instead of being hauled in railway ladles from the mixer to the steel works, the desulphurated iron is run directly into the sand bed of the casting house.

It remains to state, collectively, the advantages that are gained by this process.

(1) The first is the desulphuration of the metal. Sulphur in raw iron may result from the presence of crude sulphur in either the ores or the fuel used in smelting, or in both. A comparatively slight admixture of sulphur is often sufficient to render the iron unsafe for direct steel-making by the Bessemer process. And, as sulphur unites with the iron most readily at low temperatures, it is necessary, in order to expel it, to work the furnace at a very high temperature, which not only consumes additional fuel and fluxing material, but burns out the furnace lining more rapidly and in the end turns out iron too hot for the best results in direct steel-making.

(2) It enables furnacemen to use sulphurous ores and cheap waste materials, such as pyrites, etc., without regard to the percentage of sulphur that they may contain. As much of the coke now used in Germany contains as high as 1.8 per cent of sulphur—enough in itself to compromise the purity of the iron—this latter is a point of great practical importance. In respect, therefore, to the quality of ores and the quantity of coke and limestone consumed, the manganese process enables German furnace-managers to exercise economies which, in the present close condition of the iron and steel market, are of decisive importance.

(3) Not less valuable is the uniformity of texture that is secured in the whole mass of metal turned out, either to be run into pigs or blown at once into steel. Every practical furnaceman knows the difficulty—rather, it may be said, the impossibility—of providing that the successive charges from the same furnace shall be normal and uniform in respect to the percentages of silicon, phosphorous, and manganese that they contain. Particularly is this true in regard to silicon in iron to be used for steel. If the silicon is in excess, it will blow too hot in the converter; if the silicon is deficient, it will blow too cool, and the results of this and other irregularities in the iron leads to a serious waste in the form of defective rails. The difficulty is even increased when several furnaces are worked together for direct steel-making; frequently one furnace will be running badly while the others are running well, and thus a serious disparity in the product is inevitable. Against these difficulties the mixing together of a large mass of raw iron of varying qualities in a reservoir outside the furnaces offers so effective a remedy that even

in some large establishments where no trouble is experienced with sulphur the mixer is now regularly used in order to secure the desired uniformity.

Theoretically, the process involves the use of ferromanganese; but, as this is a somewhat expensive material, the company at Hoerde effects an important economy by using the manganiferous brown iron ores from Nassau, which are not only plenty and relatively cheap, but readily furnish the very small percentage of manganese that is requisite for desulphuration. I am informed by Mr. Masenez that it is even quite practicable, when working three blast furnaces together, to use the manganiferous ore in only one of them, but in such proportion as to provide sufficient manganese in the mixed product of all three when brought together in the reservoir. This saves labor and care in mixing the ores for two of the furnaces, and thus another small economy is effected. The proportion of manganese required to effect desulphuration is so small that its use as an ingredient would in any country add but little to the aggregate expense account. For the reasons above stated, no use is made at Hoerde of their process for purifying the slag from the sulphur in order to recover the maganese to be used over again in the desulphurating operation. This might be done with advantage in a country where no manganiferous ores exist and where ferromanganese is costly or difficult to obtain, but no such necessity prevails in Germany.

Plants for the utilization of the manganese process are now being erected at some of the largest establishments in France, Belgium, England, Austria, and Germany. Among others, the Krupp works, at Essen, have adopted it, and one furnace company in Austria is putting up a mixer that will contain 200 tons of metal.

From the abundant analyses that have been made at Hoerde to test and demonstrate the effectiveness of this process, the following figures are quoted in Mr. Massenez's report. They show the analyses of seven sample charges, each taken at a certain hour on as many consecutive days, so that the table represents the average run of the establishment for a week and exhibits for each day the percentages of sulphur in the raw iron as it came from the furnaces and the same after treatment in the mixer, thus showing the degree to which the sulphuration was reduced, as well as the uniformity that was secured in respect to phosphorus, manganese, and silicon in the desulphurated iron.

Charge.	Sulphur in iron from blast furnace.	After treatment in the mixer.			
		Sulphur.	Phosphorus.	Manganese.	Silicon.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
First	0.216	0.053	2.82	1.53	0.13
Second	0.135	0.036	2.74	2.07	0.28
Third	0.348	0.051	2.88	1.96	0.21
Fourth	0.265	0.035	2.86	1.25	0.28
Fifth	0.481	0.078	2.87	1.36	0.17
Sixth	0.176	0.086	2.74	1.31	0.23
Seventh	0.147	0.074	2.91	1.15	0.13

The analysis of an average sample of the scoria, or manganic slag, produced at Hoerde by this process gave the following results:

Components.	Per cent.	Components.	Per cent.
Manganese sulphide	17.07	Alumina	5.00
Manganous oxide	20.23	Lime	3.53
Ferrous oxide	25.46	Magnesia	0.43
Silica	18.9		

The recent discussion at London and the prominence which has been given to this subject in the leading technical journals on the Continent combine to show that the manganese process as at present perfected marks an important epoch in the history of iron and steel manufacture.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, December 23, 1891.

LAY SCHOOLS IN SPAIN.

REPORT BY CONSUL BOWEN, OF BARCELONA.

The total number of lay schools in Spain is sixty-eight. The first one was established in Madrid after the revolution of 1869. At the same time an institution called the Association for Women (Asociacion para la muger) was founded, also in Madrid, for the purpose of providing women with the means of preparing themselves for commercial and professional positions. The success of these two institutions was so palpable that similar lay schools were started enthusiastically in Badajos, Seville, Valencia, Malaga, Cordova, and Barcelona, and their number rapidly increased until there were no fewer than one hundred and thirty. Then a reaction set in, owing to the fact that certain of the professors evinced a tendency to promulgate atheistical ideas, and now the number of lay schools in Spain is only sixty-eight.

This lay movement has attained the greatest strength in this province (Catalonia), where there are now various lay schools and colleges and several reviews and papers devoted to the enunciation and propagation of lay principles and ideas; but even here it is not regarded with general favor. The great majority of the people seem satisfied to intrust the education of the children and youth of Spain to the priests and nuns. Those who do favor the movement, however, are very earnest, and they feel that they have made a beginning which promises indubitable success.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, December 10, 1891.

ELECTRICITY AND THE LOOMS OF ST. ETIENNE.

REPORT BY COMMERCIAL AGENT LOOMIS.

The city council of St. Etienne has decided upon a departure which will have an important effect on the silk and ribbon industries, both in Europe and in America.

It was resolved this week to apply electric motive power to all the hand looms in this city, and contracts have been made with an electric company for the necessary plant and currents.

The electric dynamos are to be driven by water from the city reservoirs. There is practically an unlimited supply of water in the reservoirs with a fall of upwards of 100 feet. The cost of producing the electricity will be reduced to the lowest point possible.

To grasp the importance and far-reaching results of this innovation it is necessary to understand that the bulk of the enormous output of ribbons ($21,000,000 a year) is the product of house industry. The weavers for the most part own their own looms and operate them by hand in their own houses. There are 18,000 looms which are thus distributed among the homes of the weavers, while the number of looms driven by steam in the few ribbon factories of the town is only 5,000. The 18,000 looms of the independent weavers are valued in the aggregate at $4,500,000.

What the city of St. Etienne proposes to do is to convert each one of the 18,000 hand looms into a power loom driven by electricity. Electric light will also be furnished.

The result of this change from slow, laborious, uncertain hand power to the swift, regular, unfailing power furnished by electric motors will be an increase in the productive capacities of the looms and a considerable reduction in the general expenses of fabrication. In other words, art will be wedded to modern machinery.

The weavers of St. Etienne have always been the most artistic ribbon-makers in the world, but they have enjoyed few mechanical advantages. Now the old order of things is to be changed, and the products of the St. Etienne ribbon looms, which have been a trifle more costly than similar products in some other countries, notably in Switzerland, will be turned out at the lowest possible prices. The weavers employed in the ribbon trade number 70,000 souls.

THE PLAN ADOPTED.

I annex the outline of the formal plan adopted by the city of St. Etienne for the purpose of applying electric power to the ribbon looms.

ARTICLE 1. The city of St. Etienne decides to make the experiment of supplying electric motive power to the various houses containing looms. This experiment will continue two years and shall be made under the following conditions:

ART. 2. The electric plant shall comprise a central distributing station equipped to furnish a current with an initial force of 50,000 volts. This station will be supplied with a steam

motor and generator and all the accessories. From this station wires must be laid to conduct the current a distance of 17 kilometers. Twenty-five distributing centers are to be established and a certain number of lamps to be furnished.

ART. 3. During the two years of trial the contractor will provide at his own expense for the regular working of the plant and will bind himself to supply the current from 6:30 o'clock in the morning to 7:30 o'clock in the evening, except on Sundays and fête days.

ART. 4. The renewal of the lamps and the transformation of the looms in order to meet the requirements of the application of the electro-motive power are not at the cost of the contractor.

ART. 5. The power house and a small office for the clerks will be furnished by the city, as well as the water supply.

ART. 6. The contractor will bear all the expenses concerning the putting up and keeping in order of the plant and apparatus.

ART. 7. The city will collect at its expense, risk, and peril all the taxes relative to this undertaking. It will select the positions throughout the town where electro-motors should be placed and will in general be responsible for the administrative part of the business.

ART. 8. The contractor will be responsible for all accidents arising from his negligence or that of his employés.

ART. 9. The contractor will be allowed six months from the date of signing the agreement to put the whole system and plant in working order.

ART. 10. In order to cover a part of the expenses of the contractor, the town will pay him in quarterly installments an annual sum of 10,000 francs, together with two-thirds of the total amount of the taxes collected for this purpose.

ART. 11. The town reserves to itself the right to annul the contract at any period during the two years' trial, on the condition, however, that the contractor receives from the day of the putting in motion of the whole machinery a sum not inferior to 15,000 francs.

ART. 12. At the expiration of the two years' experiment the city binds itself, if the trial has been satisfactory, to buy up all the material according to a specified price accepted by both parties.

ART. 13. The expense of converting the hand looms into power looms will be borne in the first instance by the city. The recipients of this benefit are expected to reimburse the city by means of small monthly payments.

For the use of the current and motor a charge of 7 cents a day per loom will be made.

The weavers have received the announcement of the adoption of the foregoing plan by the town council with signs of robust satisfaction. The experiment is a large one and seems to the people here to be as benevolent as it is novel.

FRANCIS B. LOOMIS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
St. Etienne, December 27, 1891.

BARNYARD MANURES.

REPORT BY COMMERCIAL AGENT GRIFFIN, OF LIMOGES.

It has been customary to regard France as the model of economy in all things. In the preparation of foods the care and study that is given to alimentation, together with the keen watch that is kept over everything that looks like waste, has given the impression that she leads the world in

economy. Whether this is true or not remains to be proven; but there are still great lessons for her to learn, as certain articles that have been recently published in that country show. They can and should serve as object lessons to American farmers. Prof. Grandison, in commenting upon this subject, remarks that in nothing is there a greater waste than in barnyard manure. The production, loss, and value of this most valuable agricultural product can not fail to teach a practical lesson to the United States.

A very important, interesting, and valuable paper has been recently published by Prof. Grandeau upon the production, loss, and value of what is commonly known as barnyard manure. According to the decennial statistics of 1882, there has been an annual loss of over 125,000,000 francs, worth of manure occasioned by lack of proper care. This figure is a very low estimate, as will be proven by the following statements.

In order to arrive at a correct estimate of the loss, the amount produced must be carefully ascertained; and, as this production varies according to the species of animal and its weight, these factors must be taken into consideration. Regard must also be had to the food, bedding, amount of water consumed, etc. To do this everything must be weighed. The following table shows the quantity of manure given by the different species per 1,000 kilograms, live weight:

Animals.	Fresh manure.	Half-rotted manure.
	Tons.	*Tons.*
Horse	19.3	15.7
Mule	19.3	15.3
Donkey	19.3	15.7
Bovine	31.3	23.3
Ovine	38.8	30.9
Porcine	35.7	28

According to this, the average quantity obtained per annum is about 31 tons 300 pounds of fresh manure and 24 tons 4 pounds of half-rotted manure from all domestic animals for every 1,000 kilograms of live weight.

MM. Lecouteux and A. Giradin have admitted the round number of 25 tons for every 1,000 kilograms of live weight collectively in one trial when they experimented with the annual product of a farm. The figures furnished by direct experiments and practical observation are almost identical, viz, 24½ against 25 in round numbers. Applying the coefficients of each animal to the relative weight, let half-rotted manure be taken as the basis of the discussion, because fresh manure contains more moisture and is less rich. The general usage in France is not to let the manure remain in either the horse or cow stables for any length of time; it is placed outside the buildings in piles. This method of calculation will necessarily give a lower figure than if fresh manure were experimented with; and the conclusions arrived at will make the loss to the cultivator far inferior to the reality, making the argument the stronger.

In 1882 the following live weights, multiplied by the given coefficients, correspond to the quantity of half-rotted manure:

Animals.	Weight.	Coefficient.	Weight of manure.
	Tons.		*Tons.*
Mule	1,309,967	15.7	20,566,472
Bovine	3,651,251	23.1	77,771,646
Ovine	691,909	30.9	20,379,988
Porcine	587,304	28	16,414,512
Total	6,240,431		135,132,618

If, instead of the particular coefficients of the live weight of each species, the 6,240,431 tons be multiplied by the empirical coefficient of Professors Lecouteux and A. Giradin, it will be found that the production of fresh manure will rise to 156,000,000 metric tons, a figure higher than the statistical valuation of 1882 by 72,000,000 tons. From these comparisons it is incontestibly found, on one side, that the estimates of the local commissions during the experiments made in 1882 are very much below the reality—their report gives only 84,000,000 tons as the annual production; on the other side, taking the figures 135,000,000 tons as the basis of calculation, greater results of the damage done to agriculture through the neglect of the farmer in his treatment of the manure will be obtained.

Finally, if the coefficient of the first column be applied to the value of the weight of the manure produced by 6,240,431 tons of animals, a production of 185,000,000 tons of manure will be realized instead of 84,000,000 tons.

It has already been stated that raw manure, on account of its containing more water, is not as rich as rotted manure; it holds 4.24 kilograms of azote per 1,000 kilograms. The most careful experiments have proven that, taken as a whole, the 1,000 kilograms lose 13.6 to 23.4 per cent of its azote in six months by exposure, according as the pile has or has not been rained on. The organic azote can not be estimated at less than 1,500 francs per ton, according to the value of organic fertilizers, which are rarely furnished to the cultivators at so low a rate.

Starting from these facts and following the basis of valuation admitted by the calculation of the manure annually produced, it will be found that the retention of azote in the manure will be according to the following table:

Coefficient.	Manure.	Azote.
	Tons.	*Tons.*
Lecouteux and Giradin	156,000,000	661,500
Experimental	135,000,000	582,500

This 156,000,000 tons of manure left exposed without being wet before it has been taken to the field will lose 155,000 tons of azote, which, at 1,500 francs per ton, amounts to 232,500,000 francs. If 135,000,000 tons of

manure be exposed under the same conditions, they will lose 134,000 tons of azote at 1,500 francs per ton; a loss of 201,000,000 francs will be the result.

Under the most favorable conditions the manure, after it has been wet, will lose 13.6 per cent of azote. Counting the loss at this rate, it will rise in the first case to 135,000,000 francs and in the second to 119,000,000 francs. From a lack of care, simply from the volatilization of azote, a clear loss in money of not less than 120,000,000 francs at the lowest calculation will be the consequence. But it would not be too high to fix the loss at 200,000,000 francs. No account has been taken in these calculations of the loss of purin, which, not having been saved, runs off in the gutters and ditches of the roads and poisons them. The quantity of azotic material, phosphates, and salts of potash which this liquid contains depends on the richness of the manure pile. It is impoverished, and the atmosphere is infected by the impurities that escape. It is impossible to assign any fixed composition to this purin, but a slight idea of the loss occasioned by permitting it to run into the gutters and ditches can be obtained from the following analysis, which is made from a cubic meter of purin:

Chemicals.	Quantity.	Value.
	Kilograms.	*Francs.*
Azote	0.3 to 1.9	0.45 to 2.85
Phosphoric acid	0.1 to 0.5	.05 to .25
Potash	2 to 5	.80 to 2.00
Value of a cubic meter		1.30 to 5.10

This sum should be added to the amount above indicated to fully show the real loss caused to our cultivators by the exposure of manure and the nonutilizing of the purin. It is almost impossible to tell even the approximate loss, but it is well known that it must be very great.

The great objections made to using commercial fertilizers is the absence of ready money to procure them. As the farmers have not the necessary money to buy nitrates, phosphoric acid, and other fertilizers, they must learn to economize the material they have and not let the fertilizing qualities of the products of the horse and cow stables lose their value through their neglect by not housing the manure. This loss amounts to hundreds of millions of francs, which must be laid to the results of not housing the manure and permitting the purin to run off. Another factor that swells this sum is the nonutilization of water-closets by the inhabitants. The total value of the residues of alimentation and farm animals exceed, according to the most moderate valuation, 2,500,000,000 francs per annum. The uncleanly habits of the population occasion 600,000,000 francs. The fertilizing matter that corresponds to this figure now soils the roads, gutters, wells, and rivers of French cities and villages, creating sources of infection, where contagious diseases like typhoid fever, diphtheria, etc., are bred by the fecal matter flowing off through the gutters and ditches and infecting the brooks, creeks,

and rivers from which the people get the water for household purposes. It is true that a small portion of these microbes sink into the earth, and some are given off into the atmosphere. A loss of 600,000,000 francs' worth of good fertilizer to a land that has 25,000,000 hectares uncultivated is astounding; it represents 24 francs per hectare.

If these two milliards and a half of fertilizers were used as economically as they would be in China and Japan, it would represent exactly a dressing equal to 100 francs per hectare annually, that is to say, a deposit of fertilizing material sufficient to maintain the productiveness of the soil in yielding hay, grain, etc.

What an appalling sum of money to be wasted in a country containing about half the number of inhabitants of the United States, and where great economy is practiced! This great loss should stand out in strong characters, so as to impress itself on all the economists of the United States, where this worse than loss could be transformed into clear gain.

WALTER T. GRIFFIN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Limoges, January 2, 1892.

MALAGA AND ITS SURROUNDINGS.

REPORT BY CONSUL NEWSON.

Malaga, the capital of the province of that name, is finely and beautifully situated on the Mediterranean Sea, in the southern portion of Spain, in the southeast corner of an extremely fertile valley 18 miles long by 9 miles wide, and has a climate which for evenness equals any place in Europe. The average temperature for the months of November, December, January, and February is 56° above zero. The place fronts south and is shut in on the north and the west by high mountains, so that in winter it is warm, and the hot sun is tempered by the cool breezes from the sea in summer. It is located in the extreme southern portion of what is known as Andalusia. Hot winds in summer and cold winds in winter sometimes make it disagreeable, but they do not last long.

The inhabitants are largely a commercial people, as much shipping is done here, and there is always great activity on the levee. The time was when from fifty to ninety American sailing vessels could be seen flying the Stars and Stripes in this harbor at one time, but the introduction of steamers has pushed these vessels out of business.

Malaga has also some factories which are worthy of note. One is a cotton factory, which employs 5,000 men and women.

The country directly west of the city is level, and there is a large tract of it susceptible to the highest cultivation, and most of it is in wheat, barley, chick-peas, sugar cane, beans, potatoes, tomatoes, and every species and con-

dition of the vegetable kingdom known; but overtopping all these are the acres and acres of grapevines, interspersed with orchards of olive trees, the orange, the fig, and the almond. Irrigation is largely used in the cultivation of the soil.

Looking out on the beautiful landscape from the top of one of the high hills, one is lost in amazement as he contemplates the page of history; that this was once the home of the Phœnicians; and that the city which lies nestling under the old Moorish castle Gibralfaro and the mountains above it was the Roman Malaca of great antiquity. Its people at that early age seem to have been somewhat unstable, for they left Tyre for Carthage, then Carthage for Rome, made terms with Scipio, and were taken by the Berbers under Tarick in the year 710, indicating its great age. After a most desperate siege the city was recovered from the invaders in 1487, and since then it has undergone foreign wars, intestine wars, and revolutions. It is said that while in the hands of the Moors—who, by the way, have proved to be the most artistic architectural people that ever lived—Malaga was a paradise on earth, and it could very easily retain that reputation even now were the Malaganeans fully alive to its intrinsic and undeveloped beauties; but money-getting hides the glittering pearls which the great Creator has scattered all over Spain, but more especially in and about the old city of Malaga.

There are about one hundred and forty-nine villages tributary to Malaga, and, as I have already said, it is the capital of a province of the same name, which contains 500,000 inhabitants. The people of these villages cultivate the grape and largely raise produce and fruits for the Malaga market. They do this in a crude way, some even by the wooden plow, as in the days of the Romans, while those near the city use iron and sometimes steam plows.

Malaga proper has a population of about 130,000, and the number of births of children of all classes is enormous.

The male portion of the upper class are all well dressed, very active, somewhat nervous, very gentlemanly, and very polite. The ladies' dresses of black are exquisite, fit admirably, and their black mantillas thrown over the head are very becoming. The gentlemen's toilets are always in excellent taste. The fan is the great panacea for all evil with the women; the cane and cigarette with the men. The children of both sexes are among the handsomest in the world, and no Parisian could dress them with better taste than do the Spaniards. The middle class dress less expensively, the women usually with shawls summer and winter, with variegated silk handkerchiefs on their heads, and very rarely with fans. Their husbands and lovers dress comely on Sundays, but there is a marked contrast between them and the class above them. The lowest class is miserable indeed; tattered, torn, haggard, bent, wrinkled, aged, piteous, mostly beggars—and this tells the the story without any elaboration.

Malaga has some fine streets and some very narrow and crooked ones. The street Marques de Larios is 60 feet wide, with 30-foot sidewalks of solid stone. The buildings on this street cost $2,500,000. They are

made entirely of stone, mortar, brick, and iron; are five stories high and have marble halls, marble steps, marble floors, with bath rooms and water-closets, bay windows and projecting iron porticoes. This same street is lighted by thirty-three double-burning gas lamps and is literally thronged every night in the week. Some of the stores on this street would rival some of our best in many of our large cities east. Then there is the Alameda, the promenade, 300 feet wide, with its fountains and trees interlocking their branches and forming a perfect shade in summer and winter, for the sun is warm here even in winter. These are exceptional streets. Most of the thoroughfares, however, are narrow, and many of the houses are common. It is a remarkable fact that there is not a wooden house in Malaga; all are built of stone.

T. M. NEWSON,
Consul.

UNITED STATES CONSULATE,
Malaga, June 9, 1891.

ACCIDENTS TO WORK PEOPLE.

REPORT BY COMMERCIAL AGENT LOOMIS, OF ST. ETIENNE.

The unofficial report of Prof. Béchaux, of the University of Lille, upon the work, scope, and aims of the international congress which met at Berne in September last to discuss the question of accidents to workingmen is at hand, and it contains some points that may be considered with profit in the United States.

The keynote of the convention was sounded in these words:

In spite of all precautions to prevent and to reduce the number of accidents, the field of human industry is as a field of battle, having its victims, as war does, counting by the score its slain and greviously wounded and by the hundred its injured and temporarily incapacitated persons. Statesmen, philosophers, employers, and workingmen are daily occupying themselves more seriously with the problem which these misfortunes present. Everywhere the remedy for these evils is sought in vain.

The question of accidents to laboring people must be viewed from many points. There must be considered: (1) Measures of precaution—legal, technical, and manner of the organization of the various industries; (2) statistics of accidents and the conclusions to be drawn from them; (3) responsibility for accidents, professional risks, etc.; (4) treatment and aid for the victims; (5) insurance against accidents.

FACTS AND FIGURES AT BERNE.

The analysis, marshaling, and general treatment of statistics bearing on the subject of accidents to workingmen seems to have been very thorough, skillful, and scientific in the congress at Berne. The question is far more complex than one is apt to fancy, and the scientific use of statistics has played an important part in the movement towards its solution. Statistics showing three important facts were examined, namely, the fact and number

of accidents, the causes of the accidents, and their consequences. It was shown that there are 100 accidents for each 10,000 workingmen, one-half of which are fatal, one-fourth of which produce permanent injuries, and the remaining fourth of which cause lighter physical ills.

The general statistics furnish each year the number of industries, the number of accidents, and the number of workmen. They show for each 1,000 workmen and for each one thousand working days the total number of accidents in all lines of labor—mines, quarries, chemical industries, manufactories, breweries, buildings, railways, tramways. Such results, however, can only be obtained by a complete system of statistics. How is that to be had? In countries where the official administrations do not give these statistics those otherwise furnished are not always reliable.

Whilst France, England, Belgium, and Italy give, to a certain degree, information on mines and railways, Switzerland, thanks to its federal board of statistics, published in 1890 a detailed statement of all the accidents reported from April 1, 1888, to March 31, 1889. But Germany and Austria alone, where insurance against accidents is obligatory, furnish really complete information. Thus in Germany the imperial office of insurances, of which the learned Dr. Bœdicker is the director, gave in 1889 the following classification: Out of 15,970 victims, 2,956 were mortally wounded and 13,014 received injuries rendering them incapable of returning to work under three months. The fatal accidents are classified as here given:

Table showing category of accidents.

Cause of accident.	Number.	Cause of accident.	Number.
Crushed under masses or objects	801	Explosives	86
Falling	512	Animals	42
Machinery	469	Steam boilers	36
Molten liquid or irrespirable gases	295	Tools	30
Cars, carriages, etc	236	Other causes	53
Railways	149	Total	2,956
Weights	130		
Drowning	117		

CAUSES.

We learn in this way the causes of the accidents. There are material and moral causes. These latter are produced by the fault of the employer, the workman, or by unforeseen means. The material causes are often difficult to determine. In France there exists at the office of the minister of public works a central committee, whose business it is to inquire into the causes of explosions of steam boilers. In 1889 the presumed causes of such explosions were reckoned as follows:

	Number.
Defective condition of construction and installation	15
Wear and tear	17
Defective repairs	3
Want of water	8
Overpressure	5
Other causes	3

The following statement, which is very instructive, is borrowed from the German statistics of the 15,970 accidents already mentioned. It shows the proportion of the responsibility on employers and employés.

	Per cent.
Accidents imputed to employers:	
Defective construction	7.05
Insufficiency of rules	2.69
Insufficiency of preventive measures	10.01
Accidents imputed to employés:	
Neglect of using preventive measures provided	1.76
Infraction of rules	5.17
Manifest imprudence	1.98
Awkwardness, inattention, etc	10.73
Accidents where both parties were to a certain extent at fault:	
Simultaneous negligence	7.73
Dangers inherent to the industry	43.4
Unknown causes	3.47
Total	100

CONSEQUENCES.

The consequences of the accidents are worthy of the most careful consideration. The workman is wounded; what will become of his family if the man is temporarily or permanently disabled? And, if he dies, what future is in store for those who were dependent on him?

Experience has shown that, in most of the accidents, the savings of the workmen are far from being adequate to guaranty the necessary resources for the family, and if the generosity of the employer is often called upon it would be presumptuous and unjust to count solely on that. Consequently, it has been the custom in Europe to have recourse to a special system having a triple object in view:

(1) To collect individual savings under the form of subscriptions.

(2) To create a common purse with these subscriptions, destined to cover the risks to which the workman is more or less exposed.

(3) To compensate the victim of an accident according to fixed rules.

One man subscribes 10 francs yearly, and will receive 1,000 francs if he be permanently disabled; another pays 100 francs per annum to receive 10,000 francs under the same circumstances.

How many ignore the fact that insurance thus understood was put into practice as far back as the fourteenth century by the Flemish, Italian, and Portuguese navigation companies? In the present century, however, insurance has developed wonderfully.

Personal insurance has long been the privilege of the wealthy classes, but by degrees generous employers and industrial companies have extended this boon to their personnel. The idea has made such progress that public men are now thinking of insuring the immense majority of workingmen.

Thanks to the researches of the statisticians, the members of the Berne congress were able to study thoroughly the question of accidents. Some of

them rightly observed that if it were necessary to compensate for accidents, it was still more necessary to prevent them. They called to mind the numerous associations created with a view to reduce the number of accidents and to insure against them. The first society of the sort was founded at Mülhausen in 1867 by Mr. Engel Dolfus. A similar society was founded in Paris by Mr. Emile Muller, and in 1887 this same society extended its influence to the provinces, so that to-day it is known under the title of "Association des Industriels de France contre les accidents du travail." Branches have been formed in twenty-seven departments, giving its benefits to 120,000 artisans. Similar societies exist now in Belgium, Holland, Austria, etc.

It can not be denied that the contemporary economical transformations, the installation of thousands of workshops, and the concentration of workmen in exceedingly narrow limits have increased the chances of accidents and even provoked appalling catastrophes. One thing is certain, however, and that is, the French civil code, as well as the foreign civil laws, is no longer in harmony with the modern needs of the workmen. Accidents are daily happening, and are due to one or the other of the three causes already mentioned, viz, negligence of the employer, negligence of the workman, unknown causes or those beyond control. Now, the civil code provides only for the first cause; but how difficult it is to establish the responsibility of the employer! How often will the employer insist on the accident being due to hazard!

It was demonstrated before the Conseil des Etats de la Suisse that the proof showing that the employer was at fault failed to be established seventy-five times out of one hundred. It must, then, be admitted that the modern workman is insufficiently protected.

OBLIGATORY INSURANCE.

The new and seductive formula of the obligatory insurance of workmen has obtained many partisans. It is no longer believed that individual initiative or private associations can guaranty sufficient provisions against accidents. The bill proposed by the French Government is clear on that point. It says:

> It is not sufficient to facilitate insurance by a number of ingenious measures; it must be rendered obligatory in the interest of employers and employés. To leave to employers the liberty of not insuring would be to evade the principle of the responsibility established by the law. The most of them would hesitate to pay the high policy demanded by the companies, and later on would be ruined by the obligation of contributing on the day of the accident the capital of an indemnity which might be considerable. Frequently their whole resources could not suffice. Where, consequently, would be the guaranty of the workmen?
>
> Obligatory insurance becomes, consequently, imperative if workmen are to be guarantied the compensation promised by legislation and if employers are to be prevented from ruining themselves.

This idea of obligatory insurance originated in Germany, but was for a long time disputed in France. It had been endeavored to point out that, if the State should hinder abuses, it had no mission to impose its authority in

matters affecting the relationship of employers and their workmen. It was said that forced insurance, far from disarming socialism, would increase the discontent, and, after claiming a decrease in the subscriptions paid at the commencement by the workmen, it would soon claim the entire payment of the policy by the employer or by the State. And, while several complain that the great industries transform the workman into a veritable machine, they pretend that the individual would be but a passive instrument or a slave of legal restraint.

These reasons did not prevail, however, in the congress of Berne. On the contrary, the success of the partisans of obligatory insurance was complete.

The principle once fixed, the congress of Berne examined the question whether the insurance should be totally organized by the State or left to the free choice of private individuals or societies. A warm discussion took place on this point. Messrs. Bœdicker and von Mayr, the representatives of Germany, showed with considerable energy the necessity of official organization in the German Empire. In that country exists a triple protecting institution of the working people—a law of June, 1883, on insurance against sickness, a law of July, 1884, against accidents, and a law of June, 1889, on insurance against incapacity and old age.

The German delegates endeavored to show that the state alone could properly take in hand the defense of the working classes, and that was, in their minds, the real social organization.

The representatives of the Latin and Anglo-Saxon countries, and particularly the French delegates (MM. Cheysson and Gigol), although recognizing the importance of the German insurances, remarked that, the principle of obligatory insurance being recognized by all, it was preferable to leave to each state the liberty to organize the insurance system according to the habits of the respective nations. In France especially, where the large industrial companies already insure their employés, it would be wise not to destroy the existing organizations, but to institute new ones appropriate to the interests of the workmen. This view met with approval in the congress.

After listening to over thirty orators and being compelled to come to a definite decision, the Berne congress accepted unanimously the principle of obligatory insurance, but decided to leave to each country the choice of applying it according to its customs and its already existing institutions. Some of the Swiss delegates desired that the congress should accept partially, if not totally, the German system, but finally they gave their adhesion to the following resolutions proposed and voted by the congress:

(1) It is an imperative duty at the present time to prevent by every possible means accidents and diseases incident to labor and to provide for the consequences.

(2) As regards preventive measures, it is desirable to combine the action of individual enterprise with that of societies and the state.

(3) In reference to compensation, it is preferable that it should be by the insurance system, and each state should be free to organize and apply it as best suited to its needs.

(4) In organizing these systems, it would seem to be advantageous to detach the slight accidents and enroll them under the classification provided for sickness.

(5) The attention of states which desire to organize a system of insurance against incapacity and old age is called to the propriety of combining it as much as possible with that of insurance against grave accidents and disease incident to certain forms of labor.

FRANCIS B. LOOMIS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
St. Etienne, December 26, 1891.

SHIPBUILDING IN GERMANY.

REPORT BY CONSUL KELLOGG, OF STETTIN.

The great extent to which shipbuilding is carried on at Stettin, especially on the two large wharfs of the Vulcan Company and the Stettin Shipbuilding Company (formerly Möller & Holberg), will be seen by the figures of the following table, which compares these companies with those of the Flensburg wharfs, of Flensburg; the Reihenstieg wharfs, of Hamburg; the Weser wharfs, of Bremen; and the Germania wharfs, of Kiel.

Companies.	Capital in shares.	Working capital after payment of last dividend.	Amount of debts and acceptances.	Amounts credited according to the books.	Reductions made on estimates of values.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Per cent.*
Vulcan wharfs, of Stettin	7,000,000	1,080,000	9,476,000	3,284,000	6.10
Stettin wharfs (late Möller & Holberg), of Stettin	2,000,000	1,016,000	960,000	720,000	4.28
Flensburg wharfs, of Flensburg	1,770,000	845,000	706,000	136,000	7
Reihenstieg wharfs, of Hamburg	2,500,000	798,000	1,140,000	1,205,000	7.7
Weser wharfs, of Bremen	2,500,000	573,000	4,963,000	321,000	4.9
Germania wharfs, of Kiel	5,500,000	142,000	4,863,000	1,211,000	2

Companies.	Mortgages entered.	Production.	Dividend.	Reserved capital.	Assets according to the books.
	Marks.	*Marks*	*Per cent.*	*Per cent.*	*Marks.*
Vulcan wharfs, of Stettin	.....	13,895,265	8 and 8	0.7	7,359,000
Stettin wharfs (late Möller & Holberg), of Stettin	990,500	3,004,211	7 and 6	3.1	2,126,000
Flensburg wharfs, of Flensburg	134,712	4,829,000	18	5	1,556,000
Reihenstieg wharfs, of Hamburg	.....	(*)	14	1.2	1,836,000
Weser wharfs, of Bremen	150,000	(*)	4	.....	2,303,000
Germania wharfs, of Kiel	.....	6,407,914	6	.....	6,167,000

* Information was not to be obtained.

The amount of debts through acceptances received, available for work contracted for but not received, was: Vulcan wharf, of Stettin, 3,018,087 marks; Weser wharf, of Bremen, 1,085,000 marks; Germania wharf, of Kiel, 2,840,000 marks.

The Germania wharfs, of Kiel, also own machine works at Tegel, near Berlin, and a property at Berlin, which are encumbered with a mortgage of 600,000 marks and mortgage bonds of 1,800,000 marks

JAMES C. KELLOGG,
Consul.

UNITED STATES CONSULATE,
Stettin, November 15, 1891.

AMERICAN PORK IN FRANCE.

REPORT BY CONSUL TRAIL, OF MARSEILLES.

The new law on the subject of the importation into France of pork, ham, and lard of December 3, 1891, became operative at Marseilles on the 7th of December. It reads as follows:

Table A, *tarif d'entrée*, of the general customs tariff, established by the law of May 7, 1881, is modified as follows: Pork, hams, and lard, 25 cents per 100 kilograms.

The modification, as regards the United States, consists in the removal of the prohibition against American pork in force since 1881.

Returning to the law of December 3, 1891, we read:

ARTICLE 1. Pork from the United States of America can be imported into France only through the ports of Dunkirk, Havre, Bordeaux, and Marseilles.

The decree of December 5, 1891, reads:

ARTICLE 1. American pork can be imported into France at places on the frontier and at seaports to be determined by decree.

Articles 2, 3, 4, 5, and 6 are in brief as follows: That the importer must produce a certificate from the United States meat inspector as to the condition of the pork; that the cases must be marked with the United States inspector's stamp; that, upon being landed, the pork is to be again inspected by sanitary inspectors appointed by the French minister of agriculture for that purpose; that all meat found to be unfit for food is to be destroyed; and that the expense attending the inspection is to be borne by the importer.

The admission of the meat into France then depends upon its being found good for food by the French inspectors. The inspection in the United States and the certificate seem to be wholly unnecessary.

What the cost of the French inspection will be is not yet known, but soon will be, as an experimental pork shipment to this port is now on the way.

The cause that led to the prohibition of American pork was, as is well known, certain epidemics of trichinosis considered particularly severe in the United States. The Société des Agriculteurs of France, in union with the ultraprotectionists, took advantage of the situation, and, on the ostensible ground of excluding meat unfit for food, but in reality for pure protection to the French farmer, forced the Government to declare the prohibition.

How the general commerce of the two countries was affected is seen from the fact that in 1880 the imports from the United States were 772,000,000

francs, while in 1888 they were 269,000,000 francs and in 1889 320,000,000 francs.

The exports from France to the United States in 1880 were 491,000,000 francs; in 1888, 382,000,000 francs; and in 1889, 405,000,000 francs.

The Semaphore, of Marseilles, of November 14, 1890, says the result has been, not that French pork has replaced the American, but simply that the poor have had less meat to eat. All of the French octrois state the diminution in the consumption of meat in consequence of its dearness.

There is another important feature of the case for the French, and that is, the loss to French maritime commerce during a decade of an important source of traffic. Nearly all the American pork imported into Marseilles prior to 1881 came in French bottoms, it amounting to 3,290 tons in 1880 and in all France the same year to 37,100 tons.

MEAT FOOD IN MARSEILLES.

In Marseilles an inferior grade of meat is being substituted for the wholesome article. There was used for food as follows:

Year.	Horses.	Mules.	Asses.	Total.
1886	808	689	446	1,943
1887	1,012	788	604	2,404
1888	957	782	627	2,366
1889	1,063	872	732	2,666
1890	2,128	1,738	1,811	5,677

The cost of meat per 100 kilograms in Marseilles in 1890 was: Beef, 127 to 155 francs; sheep, 154 to 189 francs; lamb, 174 francs; pork, 139.50 francs.

Table showing the retail price of butchers' meat per kilogram.

Description.	Price.	Description.	Price.
Veal:	*Cents.*	Beef:	*Cents.*
Breast	30	Sirloin—	
Steaks—		First quality	30
First quality	46	Second quality	27
Second quality	40	Beefsteak—	
Loin	44	First quality	44
Fillet	55	Second quality	36
Boned veal	60	Extra (coeur)	54
Lamb:		From sirloin	54
Breast	30	Fillet—	
Shoulders	40	Whole	70
Legs	44	Cuts	80
Loin	40	Mutton:	
Pork:		Shoulder—	
Blood pudding	22	Whole	27
Sausage	32	Detail	29
Chops	32	Mutton chops—	
Fillet	36	First quality	40
Lard	29	Second quality	36
Bacon	36	Legs	36
Salted sausage	40	Cuts	36 to 46

The quantity of meat, horseflesh excluded, consumed in 1890 per inhabitant is given by the chamber of commerce statistician as nearly 52 kilograms, divided up as follows: Beef and veal, 29¾ kilograms; mutton and goat, 12½ kilograms; pork, 7 kilograms; chopped meat, 2½ kilograms.

CHARLES B. TRAIL,
Consul.

UNITED STATES CONSULATE,
Marseilles, December 18, 1891.

POPULATION OF SPAIN AND ITS COLONIES.

REPORT BY CONSUL BOWEN, OF BARCELONA.

SPAIN.

The latest census of Spain was taken in 1887. The figures and facts obtained therefrom have just been published. It appears that there were then in Spain 17,565,632 inhabitants, of whom 8,612,524 were males and 8,953,108 were females. The married numbered 6,743,757; the widows and widowers, 1,232,526; and the unmarried, 9,588,914. There were 435 who were not classified, 602,005 who knew how to read, 5,004,470 who could read and write, and 11,945,871 who could not read. The Spanish born numbered 17,516,049, and the naturalized citizens numbered 7,188. The total number of city or town governments (*ayuntamientos*) in the forty-nine provinces of Spain and her adjacent islands was 9,287.

Of the foreigners in Spain 18,480 were French, 6,755 Portuguese, 3,877 Italians, 5,719 British subjects, 1,825 Germans, 743 natives of Morocco, 572 Argentines, 572 Swiss, 570 Belgians, 494 Mexicans, 408 Austrians, 401 Swedes and Norwegians, 294 citizens of the United States, and 1,584 from other parts of the world.

CUBA.

In the island of Cuba, which consists of six provinces, thirty-six judicial divisions, and one hundred and thirty-two *ayuntamientos*, the number of inhabitants was 1,631,687, of whom 882,600 were males and 749,087 were females. The whites numbered 1,102,889. Of the whites 19,685 could read, 367,629 could read and write, and 715,575 could not read. Of the colored 8,450 could read, 56,566 could read and write, and 463,782 could not read.

PORTO RICO.

Porto Rico, which is composed of ten judicial divisions and seventy-one *ayuntamientos*, had 798,565 inhabitants, of whom 399,021 were males and 399,544 were females. The whites numbered 474,933; the *pardos* (grays), 266,647; and the *morenos* (swarthy), 76,985. There were 14,533 who could read, 96,867 who could read and write, and 695,328 who could not read.

AFRICA.

In the islands of the Gulf of Guinea (Corisco, Elobey, and Fernando Po) there were 1,969 inhabitants, of whom 1,321 were males and 628 females. The whites numbered 114 and the colored 1,855. There were 65 who could read, 297 who could read and write, and 1,607 who could not read.

PHILIPPINE ISLANDS.

The Philippine Islands, which are composed of fifty provinces and districts, had a population of 5,996,161, of whom 3,035,318 were men and 2,960,843 were women.

CAROLINE ISLANDS.

In the Caroline Islands there were 865 inhabitants, of whom 861 were males and 4 were women. There were 5 Spaniards (1 man and 4 women), and 11 (men) were foreigners.

RÉSUMÉ.

The total number of the inhabitants of Spain and her islands and colonies was 25,994,014, of whom 12,930,794 were men and 13,063,220 were women.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, December 20, 1891.

GOLD MINES OF BOLIVIA.

REPORT BY MINISTER ANDERSON, OF LA PAZ.

As no detailed statement of the production of the precious metals in Bolivia has ever been prepared, so far as can be ascertained, but little is known outside of the country as to its mineral wealth other than that it is the third silver-producing country of the world and is presumably rich in gold deposits.

The absence of a properly organized Government bureau of statistics, furnishing convenient and reliable data upon this and kindred subjects, has made every attempt at such report a difficult and discouraging task. This is especially true as to the production of gold. No matter how desirable a tabulated statement of the gold production of Bolivia might be, the absence of reliable data upon the subject renders such statement practically impossible. I shall therefore not attempt to accompany this report with tabulated statistics, but confine myself to a mere statement of the estimated annual production of gold and how determined, and then pass to the consideration of the history and condition of gold-mining in this country.

ESTIMATED GOLD PRODUCTION IN 1890.

Gold, unlike silver, is not subject to export duty, and therefore there are no satisfactory means of ascertaining the annual production of the mines. Assuming, however, that one-fourth of the total production passes through the custom-house of this city, in connection with dutiable articles, as merchandise shipped under the sanction of the Government for its greater security in transportation, which is the commonly accepted estimate, and that the amount so passing for 1890, as shown by the annual report of the chief custom-house officer, was 27,540 bolivianos, we have 100,160 bolivianos as the total production for 1890, which, at the average exchange of 30 *d.*, is equivalent in round numbers to $67,582 in United States currency, being an increase of $7,782 over the amount reported for 1888 and 1889, as shown by the report of the minister of the treasury for those years.

The weight and coining value of the gold product for the years 1886–'90, as determined from the most trustworthy data obtainable, including the annual reports of the minister of the treasury, was approximately as follows:

Year.	Quantity.	Value.
	Kilograms.	
1886	110	$73,000
1887	143	95,000
1888	90	59,800
1889	90	59,800
1890	101	67,582

HISTORY OF GOLD-MINING IN BOLIVIA.

As this annual production is out of all proportion to the reputed richness and extent of the gold-bearing quartz veins and gravel beds of Bolivia, it may well be asked what are the evidences of the actual existence of these alleged rich deposits, and why this limited production? These questions can only be properly answered by tracing the history and explaining the present condition of gold-mining in this country.

Prior to the Spanish conquest in 1532, when Peru and Bolivia were under the imperial sway of the Incas, gold was regarded as a sacred metal and was used almost exclusively by the Incas in the adornment of their royal palaces, temples, and the sacred vestments of the royal household. Not entering, therefore, into the circulating medium of the Empire, which had neither commerce nor money, and unconscious of its intrinsic value, the Incas sought gold, not for gain, but out of loyalty to their rulers and unswerving devotion to their chief deity, the sun, to whose worship their gold was mainly consecrated.

Traditions of the Quichua and Aymara Indians and the oldest obtainable records, reaching back to the beginning of the sixteenth century, as well as recent explorations, all agree that the northwest provinces of Bolivia, especially the province of Larecaja, are rich in gold deposits; that, while the

Incas secured considerable quantities of this metal from the province of Carabaya, Peru, the northwest provinces of Bolivia were the principal source from whence came the gold that excited the cupidity of the early Spaniards.

Long prior to the coming of the Spaniards the town of Ilabaya, in the province of Larecaja, was the seat of certain nobles or chiefs of the Empire, who were charged among other things with the duty of forwarding the quarterly gold contribution of that district to Chiquitos, Peru, where one of the receipt boxes of the Empire was located. The record shows that on the day of the full moon of each quarter the expedition intrusted with this remittance from Ilabaya set out without fail for Chiquitos and was always received with demonstrations of joy in the several villages through which they passed. The amount of these quarterly contributions is unknown, but, as the gold was carried in twelve llama bladders holding from 4 to 5 pounds each, the amount may be approximately determined. These bladders, called "rosques," are still used by the Indians in transporting gold.

The traces of their works and their rude mining tools of wood and stone yet remaining demonstrate that gold was gathered by the Incas almost exclusively from the deposits of the mountain streams or from shallow excavations made in the rugged acclivities of the cordilleras. Not understanding the virtues of quicksilver, a mineral not rare in their Empire, and being deficient in the knowledge of extracting this metal from the quartz, their most advanced method of smelting consisting of small cone-shaped furnaces built at elevated points where they might be fanned by the mountain breezes, they were only able to skim the surface of the vast gold deposits of the country. And yet, with their primitive appliances and methods, they had no trouble in securing this precious metal in such great abundance that history furnishes no parallel of such treasures of gold as were found in the royal palaces, temples, and public edifices of the Incas at the time of the Spanish conquest.

The sudden destruction of their Empire by the Spaniards in 1532, the sacking of their cities and temples, the assassination of their Emperor Atahualpa, and the hardships to which they were subjected by their conquerors in their insatiable greed for gold led the Incas to attach a new importance to the precious metals and to conceal their rich treasures with all possible haste. The undisputed fact of history is that the amount of gold and silver thus buried in caves and forests far exceeded in quantity that which was taken by the despoilers of their Empire.

That which the Inca gave the Spaniards, said some of the Indian nobles to Benalcazar, the conqueror of Quito, was but as a kernel of corn compared with the heap before them. (Oviedo Historia las Indias.)

Disheartened by the fierce intimidations to which they were subjected, and no longer permitted to gather gold for the decoration of their temples and royal palaces, the Incas practically abandoned all forms of gold and silver mining until the close of the seventeenth century, a period of more than one hundred and fifty years. About this time Sorata, the present capital of Larecaja, was founded, and soon became the most opulent city of Upper

Peru, now Bolivia. Quickly following this event an expedition of Spaniards, mainly from Chile, and a few Portuguese adventurers who had ascended the Amazon from Brazil visited the province of Larecaja and discovered the famous gold deposits of the Tipuani River, on the eastern slope of the Andes, from whose sands the Incas had washed millions of gold before the coming of the Spaniards. This marked the beginning of the first organized gold-mining venture ever undertaken in Bolivia. That this was the El Dorado of the Incas is well supported by a single extract from these ancient records. Señor Tomás Rada, writing of their discoveries to his friend Señor Antonio Guillen, an expert miner of Chile, said:

> We have found abundant gold in these kingdoms on the other side beyond the snows, where foot traveling is difficult. If you should wish to come here, you will get gold to your heart's content.

Mining operations in northwestern Bolivia now rapidly multiplied, and, through the richness of the mines and unpaid labor of the Indian miners, vast fortunes were rapidly accumulated. It was at this period that the "rescate de oro," or annual sale of gold, was established and became the one great feature of the annual fairs or feasts held at Chuchulaya, Chiquitos, Tacacoma, and Yani, in the province of Larecaja. So much gold was offered on these occasions that it was sold at 15 pesos, or 9 bolivianos, per ounce. This annual sale of gold, a sort of Wall street exchange, is still carried on in these ancient Indian villages and attracts to them once a year the gold dealers of the country. It was my good fortune to be present at one of these great feasts, held at Chuchulaya last year, where I witnessed this "rescate de oro," established in that very pueblo more than two centuries before. It was interesting to observe that two hundred years of history had served to acquaint the 3,000 Indians present with something of the commercial value of this metal, as they had advanced the price from 9 bolivianos per ounce to 28 bolivianos, and yet they were selling it at 3 bolivianos less than the market price in this city 110 miles distant.

In 1781 the Indians, smarting under the oppressive rule of the Spaniards, rose in revolt from Cuzco, Peru, to Tucuman, in the Argentine Republic, destroyed Sorata, killed the Spanish proprietors and miners, and practically put an end to the business that made them slaves.

It was not until 1805 that work was again undertaken in this district. Señor Yriondo, a Spaniard, then led a new expedition into this field and began work at a point called Ancota. Despite the primitive methods employed, Ancota steadily yielded for the next sixty years a net annual profit of from 40 to 60 per cent on the invested capital. One of the best-known and most successful miners who ever entered this district, however, was Señor Yldefonso Villamil, of this city, whose proprietorship in Tipuani continued from 1818 until his death in 1867, but whose actual mining operations, in which was associated with him his friend Señor Zabala, were confined to fourteen years of that time and constitute the closing chapter in the history of organized gold-mining in the province of Larecaja. While he

secured large quantities of gold, the current stories of his success are the purest fiction. One of these commonly accepted stories represents that he secured 36 arrobas, or 900 pounds, of gold in a single year. For the veritable history of Señor Villamil's mining operations in Tipuani I am indebted to his venerable son, Gen. Pedro Villamil, of this city. Señor Villamil first worked that portion of the gravel banks of Tipuani known as "Salomon." In the absence of pumps and windlasses he substituted a bucket brigade of Indians, who, equipped with rude cow-skin buckets and distributed in two divisions along the notched poles that served as ladders, quickly passed the water and gravel from hand to hand to the top of the shafts, a work so fatiguing that a fresh gang was required every few hours. As fast as the bowlders were displaced by digging, drilling, or blasting a third division equipped with raw-hide ropes dragged them up the wooden skids that rested against the sloping walls of these shallow shafts. So steep was the incline of these sloping shafts, or, more properly speaking, "sumps," that it often required from 30 to 40 Indians to drag a single stone to the top. Señor Villamil's celebrated Indian bucket brigade being unable to longer drain the mines of the increasing flow of water that filtered through the sands from the Tipuani River, he was obliged to abandon the property in 1822. He retired, however, with $140,000 as the net earnings of his four years' work.

Thus stood the record of gold-mining in Bolivia up to the date of her national independence in 1825, with the single exception of the work of the early Spaniards in the quartz mines of Araca, 12 leagues south of this city, and of the Jesuits in the gold washings and quartz veins of Choquecamata, in the province of Cochabamba, of which, however, there is no obtainable data of value. While Choquecamata is said to have yielded down to 1847 some $40,000,000, it was soon after abandoned, and no further attempt at reviving the gold-mining industry was made until 1851, when Señor Villamil again entered Tipuani and began operations at "Gritado," immediately opposite the old washings of "Salomon." Employing Chinese pumps worked by overshot wheels, cranes, derricks, and other improved appliances, he met with uninterrupted success until 1861, when his advanced years and impaired health forced him to abandon "Gritado" and retire from business.

While the fabulous stories afloat in relation to the results obtained during this period have given to Tipuani a world-wide fame and brought to this legation numerous inquiries from all parts of the world, it may be well to add that, although the amount of gold secured by Señor Villamil during these ten years is generally placed at 5,000 pounds, the fact is that the yield was but 1,500 pounds, an amount equal, however, to an annual net profit of 40 per cent on the capital invested.

This closes the history of gold-mining in northwestern Bolivia. For thirty years these rich gold fields have been given up to the Indians, who only work them when forced to it by their limited demands for ready cash. And this is practically true of every part of the Republic save Chayanta, in southwestern Bolivia, where a company is working on a small scale.

LOCATION OF THE BOLIVIAN GOLD BELTS.

The gold-bearing regions of Bolivia are divided into two great belts, well defined and unique in their formation. The one best known has its origin in northwestern Bolivia, in the province of Muñecas, and extends southeast through the provinces of Larecaja, Yungas, Inquisivi, the department of Cochabamba, and thence enters Santa Cruz, the extreme eastern department of the Republic. The other has its origin in southwestern Bolivia, in the province of Lipez, and extends almost due east until it passes slightly to the south of Tupisa and Cinti, and thence bears steadily northeast until it joins the northern belt in Santa Cruz; and from thence, united, they enter Brazil and constitute one of the richest districts of that Republic.

Within the vast triangle described by these converging lines lies the great silver belt of Bolivia, running parallel with the Cordillera Real, north-northeast and south-southeast.

The extreme north of Bolivia, east of the Cordillera Real, or main Andean range, is also reputed to be rich in gold; but, as this section of the country is occupied by the Chunchos, a brave and treacherous tribe who admit no white man among them, and whose almost impenetrable forests make it a comparatively easy matter for them to hold the country against every effort of the whites to enter, nothing definite is known as to its mineral wealth.

The principal gold-bearing districts of Bolivia are, by common consent, those belonging to the northern belt. The reports of competent engineers, recently sent from London to examine this section of Bolivia, show that the vast alluvial deposits of Suchez and Yani, on the eastern slope of the Cordillera Real, are even richer than Tipuani and offer flattering inducements for hydraulic mining. The former is estimated at 100,000,000 cubic yards of gravel, yielding 37½ cents per cubic yard, and the latter at 20,000,000 cubic yards, yielding 50 cents per cubic yard.

Along many of the rivers flowing eastward in this section deep placers of great richness exist. The La Paz River, flowing through this city from the western slope of the Cordillera Real and called in the native Aymara language "Chuquiapa," meaning "river of gold," also carries considerable gold, and in the days of the early Spaniards was worked with great profit.

The present washings of Chuquiaguillo, an affluent of the La Paz River and only a league distant from this city, are also worthy of mention. It was here that an Indian, in the seventeenth century, picked up a mass of native gold that sold for $11,269, and which may now be seen in the Museum of Natural History in Madrid.

GENERAL REMARKS.

There are other gold-bearing districts capable of yielding enormous quantities of this precious metal under proper conditions, as, for instance, the Rio Suipacha, in southern Bolivia; but, like the districts already named, they are practically unproductive for the want of strong and well-directed capital,

suitable machinery, and skilled labor. It is proper to observe, however, that, while Bolivia is thus rich in gold and is far richer in silver, as will appear from my report upon that subject, which I shall have the honor to transmit to the Department in a few days, it is well understood by those acquainted with the country and its environments that, situated, as it is, 500 miles from the Pacific coast, the cost of transporting the machinery and other materials necessary to successful mining in this country is so great that these rich deposits only offer inducements to strong capital and the best possible management. All the silver mines of Bolivia now worked under these conditions are paying handsomely, while all others are unprofitable; and so must it prove in every organized effort for the development of gold-mining in this Republic.

While it is apparent from what has here been stated that under present conditions the annual production of gold in Bolivia is small, it is equally apparent that, under proper conditions, it is capable of indefinite expansion. If the old system of mining employed by the Incas and early Spaniards yielded the rich tributes of gold to the Spanish Crown described by Prescott and others, certain it is that, with proper transportation facilities and the introduction of our modern system of mining, backed by sufficient capital and the requisite mining and business intelligence, Bolivia will become one of the greatest gold-mining centers of the world.

The vast mineral regions and ancient river channels of the Bolivian cordilleras and the auriferous gravel beds of the great Andean plateau but await the vitalizing touch of the agencies described to make them yield up their enormous treasures of gold and vastly increase the world's annual production of this precious metal.

T. H. ANDERSON,
Minister.

UNITED STATES LEGATION,
La Paz, November 23, 1891.

THE PANAMA RAILROAD.

REPORT BY CONSUL-GENERAL ADAMSON.

There is but one railroad in the department of Panama, namely, that which starts from Colon, on the Atlantic side of the isthmus, and terminates at this city of Panama. It is a private corporation, chartered under the laws of the State of New York, having its principal office in the city of New York, and is called the Panama Railroad Company. Its road has a length of 47½ miles.

The rates for freight on other than local produce are shown by the inclosed "tariff rates for freight" (inclosure 1) and must be paid in United States gold or its equivalent. A reduction of one-third is made from the rates of said tariff on Panama products carried over the line for exportation.

With a view to the encouragement of agriculture on the lands contiguous to the railroad, the Panama Railroad Company in July last reduced rates for

freight on local products, as shown by the inclosed "special net local tariff" (inclosure 2), the rates of which are payable in Colombian silver, the dollar of which fluctuates from 65 to 73 cents as compared with United States coin.

Until about three years ago, the charge for transportation of passengers on the Panama Railroad was probably the highest known, being $25 in United States gold for first-class and $10 United States gold for second-class passengers between Panama and Colon, or about 50 cents and 20 cents a mile, respectively. The present rates for transportation of passengers average about 10 and 5 cents a mile, respectively, for first and second class rates. Luggage other than that carried in the hand is charged for at the rate of 5 cents per pound between terminal points.

Steamship passengers on through tickets pay $10 gold for first class and $5 gold for second class, but they are allowed 200 pounds and 100 pounds, respectively, of free luggage, which brings the rate to the same as local passengers pay.

There are no laws for the regulation of freight and passenger charges of the Panama Railroad Company.

During the period for which the concession was granted to the Panama Railroad Company, namely, ninety-nine years, no other road can be made between the two oceans and across the department of Panama without the consent of the Panama Railroad Company. This prohibition includes the making of even a wagon road. The Railroad Company pays the Colombian Government $250,000 annually for its privileges.

THOMAS ADAMSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Panama, November 15, 1891.

TARIFF RATES FOR FREIGHT TAKING EFFECT JULY 1, 1888.

[Inclosure 1 in Consul-General Adamson's report.]

The payment of all dues to the company must be in United States gold coin or its equivalent at the rates established by the company.

CLASSIFICATION OF FREIGHT.

First class—40 cents per cubic foot.

Bonnets, books, boots, caps, cards (playing), cigars, cinnamon, clothing, drugs, dry goods (not elsewhere specified), eau de cologne, essences, essential oils, feathers, fireworks, flannel, furs, glass shades, gloves, glassware (fine), hats (fur or felt and of Guayaquil or straw), harness, hosiery, light goods (not elsewhere specified), looking-glasses, matches, medicines, millinery, musical instruments, oilcloth, organs, plants, paintings and engravings, paper hangings, perfumery, paper (writing or printing), peltry (not otherwise specified), pianos, porcelain and china ware (fine), rubber clothing, saddlery shoes, and sewing machines.

Second class—1.2 cents per pound.

Almonds, anchovies, aniseed, balsams, baskets, beeswax, britannia ware, carpeting, chandeliers, chocolate, clocks, cochineal, confectionery, cordials, cork and cork wood, eggs, fire-

arms, German-silver ware, groceries (not elsewhere specified), indigo, lamps (ornamented), mattresses, nuts (not elsewhere specified), picture frames, plated goods, platform scales, preserved meats and fruits, rhubarb, soap (fancy), straw (for manufacturing), tobacco (manufactured), tortoise shell, tree nails, varnish (in tins), veneers, and wooden ware.

Third class—eight-tenths of a cent per pound.

Bark, blankets, bells, brooms, brushes, cutlery, domestics (unbleached of cotton), fruits (dried), hair, leather (dressed), oil (not elsewhere specified), ornaments (of stone, clay, marble, or alabaster), paints (dry and in oil), printing ink, sarsaparilla, safety fuse, tacks, tinware, tobacco (unmanufactured), tubing, turpentine, type, whalebone, wool (alpaca), wire (copper and brass), canned goods, and sardines.

Fourth class—six-tenths of a cent per pound.

Axes, beef, butter, blacking, bacon (in casks), borax, bread, bottles (empty), candles, cheese, cartridges (metallic, empty), copper, sheathing and spikes, castings (copper, brass, or bronze), cotton waste, crackers, crockery (not elsewhere specified), copperas, cotton (in compressed bales), deerskins (in bales), fish, flour, felt (for sheathing), grindstones, glassware (coarse), goatskins (in bales), hardware, hams (in casks), hemp (manufactures of, such as canvas, osnaburg, and bagging), herrings, hoops (of wood or iron), hollow ware (iron), hemp (manufactured), hats (coarse, country straw, or palm leaf), India rubber, lard, machetes, meal, millstones, mats, machinery, molasses, matting, oats, oakum, orchilla weed, pork (salt), potatoes, pickles, rice, rope, salt, sago, safes (iron), seeds, saleratus, soda, starch, sugar, steel (in bars and bundles), shovels, spades, screws, soda water, sirups, tool handles, sugar mills, molds and pans, sheepskins (in bales), stoves, twine, tallow, vegetables, vises (iron), wool (of sheep), window glass, yarn (of cotton), and zinc (in sheets).

Fifth class—four-tenths of a cent per pound.

Ale, alum, anchors, anvils, barilla, beans, cannon, cables (iron), cannon balls and shot (iron), cocoa, cider, coffee, copper bars and ores, corn, crowbars, earthenware (in casks or crates), hollow shot, hay, ice (in quantity), iron castings (not machinery—bars, tubes, plates, etc.), lead, old junk (rope), pearl shells, peas, porter, putty, school slates, shot (in bags), silver ore, soap (common), spikes (iron), tea, tin (bars and ores), vinegar, wire (iron), wine, zinc (in ingots), and liquors.

Sixth class—two-tenths of a cent per pound.

Borate of lime, brick, cement, guano (in bags), iron (in pigs), lemons, lime, limes, marble, nitrate of soda, and stone.

Seventh class—certain articles and rates not specified in the first six classes.

Agricultural implements, 15 cents per foot; acids (muriatic, sulphuric, and nitric), 4 cents per pound; passengers' baggage (15 pounds free), 3 cents per pound; boats, 80 cents per running foot; bananas, three-tenths of a cent per pound; carriages, 15 cents per foot; cartridges (with balls), 2 cents per pound; cattle (at owner's risk), $5 each; coal, $4 per ton; cocoanuts, $1 per hundred; demijohns (empty), 25 cents each; dyewoods, $4 per ton; furniture, 20 cents per foot; fruits of the isthmus (not otherwise enumerated), three-tenths of a cent per pound; gunpowder, 4 cents per pound; gold, two-tenths of a cent per cent on value; hides, 15 cents each; horses (at owner's risk)—5 and over, $10 each; under 5, $20 each; jewelry, two-tenths of a cent per cent on value; lumber—white pine, $8 per thousand superficial feet; yellow pine, $10 per thousand superficial feet; cedar and mahogany, $12 per thousand superficial feet; cocobolo, $7 per ton of 2,000 pounds; mules (at owner's risk)—5 and over, $10 each; under 5, $20 each; nails, half a cent per pound; oranges, three-tenths of a cent per pound; oil (lard and machinery), three-fourths of a cent per pound; pitch, 80 cents per barrel; platina, two-tenths of 1 per cent on value; precious stones, two-tenths of 1 per cent on value; poultry, $1.50 per dozen; plantains, three-tenths of a cent per pound; quicksilver, 25 cents per iron flask; resin, 80 cents per barrel; sheep (at owner's risk)—15 and over, $3

each; under 15, $5 each; shingles, $1.20 per thousand superficial feet; silver, three-tenths of 1 per cent on value; swine, $2 each; tar, 80 cents per barrel; yams, three-fourths of a cent per pound; mail matter—letters, 22 cents per pound; newspapers, 8 cents per pound; parcels (*colis postaux*, 1 cubic foot or 14 pounds), 25 cents each. These parcels must contain neither specie, precious metals, jewelry, nor objects of value. In case of loss, the company will not be responsible for an amount exceeding $5. Storage will be charged on parcels remaining in the company's storehouses after one week.

SPECIAL CONDITIONS.

Freight is to be charged on gross weight of packages and to be paid in advance or before delivery of goods. All claims for loss or damage are to be presented within five days. The company will not be responsible for articles of extra value unless declared and waybilled accordingly. No single package will be transported for less than $1, except parcels not exceeding 1 cubic foot in size and 14 pounds in weight. The company will not be responsible for the breakage or loss of contents of any package containing liquid, the decay of any fruits or vegetables, the wastage of ice, the death of poultry or animals from delay or detention on the road, or for breakage or leakage of any description. Storage will be charged on all goods remaining in the company's storehouse or cars after forty-eight and seventy-two hours, respectively, unless by special agreement.

STORAGE.

The following rates will be charged after goods have been in the warehouses of the company forty-eight hours: Barrels and half barrels, 25 cents per week; packages, 25 cents per week; hides, 10 cents per week; packages of extra size, special rates. Every fraction of a week will be charged as a week.

Cars detained longer than seventy-two hours will be charged for at the rate of $5 per day.

All articles not above enumerated to be assimilated and charged for in proportion.

SPECIAL NET LOCAL TARIFF.

[Inclosure 2 in Consul-General Adamson's report.]

The following are temporarily reduced rates for freight (the product of territory on or immediately contiguous to the Panama Railroad) from way stations to either terminus of Colon or Panama, adopted for the purpose of encouraging agriculture on the isthmus, and taking effect July 1, 1891, and which are subject to modifications and are to remain in force until further notice only:

Bananas, three-tenths of a cent per pound; cassava, one-fourth of a cent per pound; charcoal, three-tenths of a cent per pound; cocoanuts, half a cent per pound; cocoes, one-fourth of a cent per pound; eggs, three-fourths of a cent per pound; fresh meat, half a cent per pound; fruits (such as plantains, pineapples, oranges, etc., except bananas), one-fourth of a cent per pound; goats, $1.50 each; grains (such as rice, common beans, peas, etc.), three-tenths of a cent per pound; henniquen and similar fibers, three-tenths of a cent per pound; horses, $7.50 each; lime, one-fourth of a cent per pound; molasses, three-tenths of a cent per pound; pigs, $1.50 each; plants, 30 cents per cubic foot; poultry—turkeys, $2.40 per dozen; chickens, $1.20 per dozen; sheep, $1.50 each; starch, three-tenths of a cent per pound; sugar, three-tenths of a cent per pound; sugar cane, one-fourth of a cent per pound; sweet potatoes, one-fourth of a cent per pound; vegetables, one-fourth of a cent per pound; yams, one-fourth of a cent per pound.

The above are all net rates payable in Colombian silver and are not subject to any rebate for drawback on account of the articles being of Colombian production.

The amount of freight will be calculated on gross weight.

The lowest amount of freight accepted for any one shipment is $1 in Colombian silver.

THE BANK OF SPAIN.

REPORT BY CONSUL BOWEN, OF BARCELONA.

To the Count de Cabarrus is due the honor of having suggested that a bank be established in Madrid. His suggestion was followed, and in the year 1782 the bank called the "Banco de San Carlos" was started. It discounted promissory notes, and administered the affairs of the army and navy, and paid all the obligations of royal bills of exchange. The capital of the bank was fixed at 300,000,000 reals (a real is 5 cents), divided into one hundred and fifty thousand shares of 2,000 reals each. The shareholders selected eight directors, who, however, had to be approved of by the Crown. This bank, owing to the money it loaned to the Crown from its capital, to the failure of the Compañia de Filipinas, and to its connection with the unfortunate canal of Guadarrama y Manzanares, practically failed in 1829; for it assumed the new name of "Banco Español de San Fernando" and compromised its indebtedness so as to continue business with a capital of only 60,000,000 reals. It now increased its operations, and had the good fortune to maintain itself in a favorable condition during the period of seven years of civil war through which the nation passed after the death of Ferdinand VII and until the coming of Isabel II to the throne. Peace restored, a new impetus was given to trade, and in response thereto it was thought well to create another bank. Consequently in 1844 a new bank, called the "Bank of Isabel II," was opened with a capital of 100,000,000 reals, with authority to issue paper money, discount bills, and perform other acts calculated to expand trade; but within a short time its operations were confined almost exclusively to making loans to the State on a large scale. The Government, desiring to put an end to the rivalry of these two banks, finally consolidated them on the 25th of February, 1847, under the name of "Banco Español de San Fernando," with a capital of 400,000,000 reals.

This new bank had the same privileges that had been accorded to its two predecessors. It, too, endeavored to extend its business, and to do so it made loans on its own stock. When, therefore, in 1848 the financial and political troubles occurred that shook Europe, its position was very distressing, and it was only saved from failing by the aid it received from its principal creditors and from the Government, which, as soon as law and order were established, reorganized the bank by a decree dated May 4, 1849, reduced its capital to 200,000,000 reals of one thousand shares of 1,200 reals each, and ordained that paper money could be issued only to the amount of one-half of the bank's actual capital, and that it should hold a reserve either in gold or silver of one-third of the paper money thus issued. Furthermore, the bank was forbidden to loan money on its own stock.

The royal decree of December 18, 1851, compelled the bank to make a weekly statement in the Official Gazette of its condition, and prorogued for

twenty-five years the bank's privilege of issuing paper money, permitting the issue to equal the amount of capital. By the decree of January 28, 1856, the bank's name ceased to be "Banco Español de San Fernando" and became the "Banco de España" (the Bank of Spain). By the decree of July 14, 1891, the privileges of the bank were continued up to December 31, 1921, and in addition it was authorized to issue notes payable to the bearer to the amount of 1,500,000,000 pesetas (a peseta is about 19.3 cents), provided it keeps in its vaults one-third of said amount in bars of gold or silver. In return the bank must provide the public treasury with 150,000,000 pesetas without interest. Shortly after this decree went into operation Spanish bills, stocks, and bonds began to pour into Spain from foreign countries, and the exchange rose with surprising and almost alarming rapidity. On the 1st day of January, 1891, an English pound sterling could be bought in Barcelona for 25.80 pesetas; but on the 15th of November following it could only be bought for 28.80 pesetas, nor can it now be bought for much less. Many explanations have been offered about this condition of affairs, but the only one that seems adequate is that foreign nations have felt less confidence in Spain's ability to meet her obligations.

The management of the Bank of Spain have been severely criticised for exceeding their powers in emitting paper money to the amount of 63,250,000 pesetas beyond the amount authorized by law and because they held a reserve of only 30⅔ per cent in bars of gold and silver. This state of affairs has produced a feeling of distrust, not only in foreign countries, but in Spain also. England and France are especially interested in Spain's condition, and are especially critical of the way in which the bank is managed. In neither England nor France does the treasury owe the bank; on the contrary, the Bank of England owes the English treasury £109,000,000 and the Bank of France owes the French treasury 296,500,000 francs. Such a happy state of affairs does not exist in Spain; the Spanish treasury owes the Bank of Spain 327,500,000 pesetas. In order to establish confidence and meet the requirements of the situation, the Spanish Government is now entertaining a plan to issue an amortizable loan of £10,000,000.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, December 18, 1891.

THE PHYLLOXERA IN GERMANY.

REPORT BY COMMERCIAL AGENT SMITH, OF MAYENCE.

According to a statement submitted to the Reichstag, it appears that the sum of 332,000 marks ($79,000) was expended by the German Government during the fiscal year 1890–'91 in combating the phylloxera, and that since 1879 some 2,850,000 marks ($639,000) have been officially spent in this

way. This shows considerable struggle with the pest and indicates a good deal of devastation. Much of the money, however, is given out for careful inspection of the vines and for preventive measures.

On the whole, the phylloxera can not be regarded as having made much progress in Germany. The experience of France taught the Germans to be early on their guard, and their watchfulness, coupled, perhaps, with methods of grape cultivation different from those prevailing in France and a more northerly climate, has prevented the phylloxera from bringing about widespread disaster.

The new batches of phylloxera discovered in Germany in 1890 were as follows: Twenty-two in the Rhine Province, on the right bank of the Rhine, infecting 157 vines; 52 on the left bank of the Rhine, in the same province, infecting 450 vines; 66 in the province of Hesse-Nassau, infecting 5,919 vines, partly in the district of St. Goarshausen and partly in that of Boring; 81 in the province of Saxony, infecting 931 vines, mostly near Freiburg, on the Unstrut; 19 in the Kingdom of Saxony, infecting 1,987 vines, chiefly in the districts of Niederlössnitz and Naundorf; 20 in Würtemburg, infecting 75 vines in the district of Neckarweihingen; 22 in Alsace-Lorraine, infecting 711 vines.

No phylloxera have yet been discovered, I believe, in the fine vineyards of the Rhine.

JAMES H. SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, November 20, 1891.

FRENCH PLATE-GLASS MANUFACTURE.

REPORT BY CONSUL ANGIER, OF RHEIMS.

The only establishment of this kind within this consular district is the Société St. Gobain, located at Chauny, department of Aisne. This society exports to the United States of its various manufactured glass articles, such as plate glass for windows, plate glass for mirrors, etc., to the declared value of about $400,000 per annum. I am intimately acquainted with their two agents here, men well informed on the particular points concerning which information was requested by the Department; but they both declined, after writing to their general offices at Paris, to give me any information whatever on the points desired, stating that their system was a secret possessed by them only, and that in this secret rested the success of their business.

I regret my inability to secure the information desired, and I know it would be futile for me to seek this information elsewhere than through the Société St. Gobain.

ALTON ANGIER,
Consul.

UNITED STATES CONSULATE,
Rheims, November 8, 1891.

THE WORLD'S SHIPBUILDING.

REPORT BY CONSUL METCALF, OF NEWCASTLE.

I have the honor to inclose herewith a copy of the "World's Shipbuilding" for 1891, published by the Chronicle newspaper of this city.

HORACE METCALF,
Consul.

UNITED STATES CONSULATE,
Newcastle, December 29, 1891.

THE WORLD'S SHIPBUILDING IN 1891.

[Inclosure in Consul Metcalf's report.]

The most striking feature in the long list of shipbuilding returns for the year 1891 is the general falling off in the tonnage launched. It is a declension that is noticeable in many yards and at many ports. Along the coast we notice that prominent rivers and ports turned out fewer ships. On the Tyne many yards built less, and the general result is lower. On the Wear, at West Hartlepool, on the Tees, at Whitby, on the Clyde, and at other Scottish ports there has been a decrease in ports that are large, and ports that are small, contributors to the output. In some cases there are special reasons for the falling off—there are building yards which have had full employment on Government work, taking years to complete, and which, though advanced greatly in the year, has not been launched. Again, some builders have been at work on ships of a higher class, and thus their output, if smaller in tons, is of more value. But the fact remains that, measured by tons, there has been a further decrease in the amount of the new work that has been completed by our builders in the year 1891. Apart from that decrease, the work turned out has been vast and varied, and it has included, perhaps, fewer of the great "liners," but many large vessels for general trades. It is most interesting to notice the growth and variation in the size of vessels.

MATERIALS USED.

A table given in previous years as to the materials used in the building of the vessels locally may now be given. It shows that steel predominates as a material, but that there is still for certain classes of vessels a considerable use of iron. For the local ports named the following table shows the material reported to be used:

Ports.	Steel.	Iron.	Wood and composite.
Tyne	93	35	3
Wear	80	.....	.....
West Hartlepool	41	.....	.....
Tees	49	22	.....
Total	263	57	3

There are fewer steel vessels than in the previous year, but more iron. The wooden vessels are the same in number—two—but there has been built on the Tyne one composite ship. The increase in the iron vessels is due largely to the building of small steamers for special purposes. It is well understood that in a "steel" vessel there is a considerable amount of iron plates used for decks and other parts; and it is evident that some shipbuilders like to have that

material for the hull also. Two ports—the Wear and West Hartlepool—have built all their vessels of steel. One reason for the preference of that material is found in the fact that, whereas a few years ago the production of steel plates in the county of Durham was extremely small, it is now in that county and on its borders so large that all the needs of the shipbuilders of the north can be met, and more than met, by the local steel-plate makers. There is more than convenience served—there is an increased cheapness of plates, because of the increased competition amongst the makers, and also because of the saving in carriage.

AVERAGE SIZE OF VESSELS.

For three years we have illustrated the change in the average size of vessels by the citation of figures for four local ports, and to continue the illustration will allow of a contrast to be made as follows for four years indicated:

Ports.	1881.	1889.	1890.	1891.
	Tons.	*Tons.*	*Tons.*	*Tons.*
Tyne	1,440	1,817	1,850	1,407
Wear	1,681	2,128	2,243	2,158
West Hartlepool	1,767	2,102	2,322	2,360
Tees	1,771	2,083	2,860	1,741

LESSENED LOCAL BUILDING.

Locally there have been sometimes more ships but less tonnage produced in the year, as we have hinted above. The Tyne built fifteen more vessels in 1891 than in 1890, but the tonnage was 49,000 tons less. The Wear built one more vessel, but the aggregate was 5,000 tons less. The Tees builders constructed seven more vessels, but the tonnage was 7,000 tons less; and at West Hartlepool there were two fewer vessels, with a diminution of over 2,000 tons. These are sufficient examples to prove that the increase in the number of vessels is frequent, and that the decrease in the tonnage is general. There have been built at some of our ports more trawlers, tugs, and river boats, and this has kept up the number of the ships, whilst the average tonnage has been thereby kept low—lower, in many instances, than in the previous year. It may, however, be noted that there has been a very large output from some of the individual shipbuilding yards. W. Gray & Co., at West Hartlepool, have launched one steamer fortnightly throughout the year, and the average tonnage of these has been 2,273 tons. Messrs. Ropner & Son, at Stockton, have launched 9,494 tons in the year from each of their building berths. On the Wear Messrs. Short Brothers record an average tonnage of 2,347 tons, and on the Tyne the output of the Palmer Shipbuilding Company averages 2,520 tons for each vessel. Extending our view to Belfast, we have a still more remarkable return in that of Messrs. Harland & Wolff, and that of the great building firm at Barrow-on-Furness invites attention. But it may be said that the place of the yards in regard to the output is more interesting in the total.

THE "BLUE RIBBON" OF SHIPBUILDING.

It may be remembered that last year the yards that launched the largest tonnage stood thus: Russell & Co., Glasgow; then W. Gray & Co., West Hartlepool; next Harland & Wolff, Belfast; and, fourth, Palmer's Shipbuilding and Iron Company, Jarrow. There is an alteration this year. The firms are in the following order and with the tonnage named:

	Tons.
Harland & Wolff, Belfast	64,962
W. Gray & Co. (limited), West Hartlepool	59,033
Russell & Co., Glasgow	56,667
Sir Raylton Dixon & Co., Middlesborough	38,597

The fact that a Belfast firm has this year launched the largest tonnage is in itself remarkable, and it is still more so when the absence of the production of steel plates and of iron in Ireland is borne in mind. It calls up the question of the position of the ports.

NORTHEASTERN PORTS VS. CLYDE—COMPARATIVE FIGURES FOR 1891.

An interesting comparison may be first made—a comparison of the relative production of the northeastern district and of the Clyde district:

Ports.	Number of firms.	Number of vessels.	Gross tons.
Tyne	19	142	135,367
Wear	13	89	192,114
Tees	6	69	120,132
West Hartlepool	3	41	96,993
Whitby	1	2	4,781
Blyth	2	6	7,005
Total	44	349	606,392
Clyde	40	336	325,075

For Clyde ports the decrease of tonnage in 1891 from 1890 was 24,870 tons; for the northeast ports, 69,745 tons.

Thus, though the decrease at the northeastern ports for the year is greater than that for the Clyde district ports, yet our local ports build in the total far more than do the ports grouped as the Clyde district. We may now give a table of the total tonnage built in the United Kingdom in the year, in which the first place is assigned to the northeastern ports, the second to the Clyde ports, Belfast following third, and Barrow-in-Furness and the Mersey coming in the order named, whilst Dundee and Grangemouth are next on the list. The following is a summary of vessels built:

Ports.	Tons.	Ports.	Tons.
Northeastern ports	606,392	Whitehaven and Workington	5,401
Clyde	325,075	Grangemouth	20,360
Belfast	92,429	Aberdeen	6,724
Mersey	23,383	Londonderry	11,047
Barrow-in-Furness	31,444	Miscellaneous	47,221
Humber	18,611	Total	1,209,904
Dundee	21,817		

TYPES OF VESSELS.

There is less alteration in the types of vessels this year, but the tonnage has consisted very considerably of cargo-carrying vessels. There have been several governmental vessels—war ships of various types—and there has been a very large number of steam trawlers, mainly of iron. Sailing vessels, as we have noted, are very numerous this year.

MARINE ENGINEERING.

Very great interest attaches to the engining of the vessels built. The importance of marine engineering to this district can scarcely be overestimated. We can illustrate that importance by giving summaries of the total of the engines built by many of the leading builders in the north. It is not needful to do more, because the list of vessels built includes the engine power in most cases.

The following statement will, then, be of interest:

Table showing vessels engined in 1891.

Builders.	No.	Indicated horse power.
Hawthorn, Leslie & Co., Newcastle	9	43,500
Wallsend Slipway and Engineering Company	25	34,220
Northeastern Marine Engine Company:		
Wallsend	22	24,560
Sunderland	21	14,450
George Clark, Sunderland	22	*4,270
W. Allen & Co., Sunderland	11	11,400
T. Richardson & Sons, Hartlepool	30	45,000
Central Marine Engine Works, West Hartlepool	23	32,590
Westgarth, English & Co., Middlesborough	13	9,725

*Nominal horse power.

The varied nature of the work turned out by these and other marine-engine builders may be indicated by the fact that Messrs. Hawthorn, Leslie & Co.'s total above given includes the engines for two men-of-war, the *Æolus* and *Brilliant*, each of which were of 9,000-horse power; engines for Saratov, of 10,000-horse power, and the other sets down to 1,300-horse power. Whilst thus illustrating the extent of the work done by some of the marine engineers, it should not be forgotten that many of the builders engine the steamers they build, and that thus their return is a double one, showing both the work of the shipbuilder and of the marine engineer. It is needless to add that the marine-engine works have been very well employed during the year, though one or two irritating strikes have lessened the output. In addition to the work for new steamers, the conversion of engines continues. Great changes continue in the industry, and the old compound engines, low in pressure, large in coal consumption, are rapidly giving place to those of the newer type, more economical in work, and having the accompaniment of the newer furnaces—corrugated, ribbed, or otherwise. The new type of water-condensers is also becoming more general in use.

FOREIGN SHIPBUILDING.

The list of vessels launched by foreign shipbuilders is the longest we have yet been able to give, and it illustrates the growth of the industry abroad. We may add that the Vossische Zeitung reprints, with complimentary remarks, our list of shipbuilding at some German ports. We are able, too, to give the launch list of the most important shipbuilding firm in the United States—the William Cramp & Sons Ship and Engine Building Company, of Philadelphia. This company are builders of the United States ships of war *Baltimore*, *Philadelphia*, *Newark*, and others. At the present time of Government and mercantile work they have 43,698 tons under construction, the five vessels aggregating which tonnage are of the estimated value of £2,888,000 and including two battle ships. Some of the continental shipbuilding yards are distant from supplies of iron and coal, and their production is the more noticeable on that account.

PROSPECTS OF SHIPBUILDING.

We have a consensus of opinion that for a few months—possibly for the early half of the year—there will be greater activity in our shipbuilding yards than there has been for at least six months. One of the chief builders in the north tells us that "work for some months ahead is generally assured, though all the vacant berths will not be filled." Another firm adds that they "have work ahead for some time, though prices have ruled low." A third builder remarks that with "builders having introduced more machinery, increased crane power, hydraulic plant, etc., the wages of the men have been increased, and there should be

good work done with the orders that have been taken." Will the orders that have been given out be added to and continued? is a pertinent question; and the reply is that the freight market will decide. One of the largest investors in shipping on the northeast coast gives us this opinion:

"The better freights which have prevailed during the latter months of the year have much improved dividend prospects for the current half year, especially for the triple-expansion boats. Several of the best West Hartlepool, Whitby, Tyne, and other northern managements will shortly send out decidedly improved dividends in comparison with those of a year ago, and in some cases even the compound boats will be found to have wiped off their debit balances and will now pay small and even fair dividends. In the great majority of cases, however, these older boats will not do more than reduce their debit balances somewhat, as they labor under manifest and great disadvantages in comparison with the newer triples. The conditions of ship-owning and ship-managing have changed very much—for the better, I think—during the last few years. Thanks to the Newcastle Daily Chronicle in a very large degree, managing ships is no longer gold-digging, but a science; and 3,000 to 5,000 ton boats built on fine lines, with powerful engines and small consumption of coal, can be worked to make money upon what have usually been considered low freights while the old-fashioned boats are running at a loss. I think there is little danger of any glut in steamships such as we had a few years since occurring again for many years to come, if ever. We shall not again see people throwing their money to anybody who may set up as a ship 'manager,' but money will in future be invested with more intelligence and managed on fair commercial principles—more as it is invested in land carrying (*i. e.*, railway) companies. It appears to me that modern ships, such as named above, when well and honestly managed, should be a safe 10 per cent investment if, when a larger percentage was earned, they would only divide 10 per cent and let all surplus profits go to reserve for depreciation and equalization of dividends. This plan, if generally adopted, combined with full, clear, and carefully audited accounts, would speedily place the mercantile shipping interest amongst high-class investments, with every reasonable guaranty of security and diverted of those sinister elements of secret charges and nebulous commissions which during so long a period brought it deservedly into such great distrust and disrepute. Honesty, in the long run, is not only the best policy, but it is also the most profitable policy."

So much from the point of view of an investor. Let us now give the opinion of one of the oldest and best known of shipping authorities. Sir Thomas Sutherland, speaking at the meeting of the Peninsular and Oriental Steam Navigation Company, after noticing the partial lull in shipbuilding, and more especially the lull in the building of great lines such as those which have in the past few years revolutionized some of the great trades, said:

"Although there is a certain lull, it is only, I consider, one of a partial character. The fact is, I suppose, every person engaged in shipping feels the competition to be so keen that it is necessary for him to obtain new tools and new appliances at any cost. There is no doubt that the extremely low rates to which I have been referring as existing on the regular lines to the far East are due to the fact that these new vessels, with their improved machinery and their very large capacity, can work for a long time at what I might call ruinous rates without showing a cash deficiency. They may put by no depreciation, they may run their own risk to a large extent in regard to insurance, but these newer vessels can run at what we should term, looking back to a few years ago, absurdly low rates without showing any absolute cash deficiency. There is also this fact, that the tramp vessels, as they are called, or, as they are more euphoniously described by the French, *vagabonds de l'ocean*, are much more fortunate in working than regular liners such as ours, because they are able to go hither and thither at their will, and whenever there is the slightest spurt in our trade we suddenly find a flotilla of these *vagabonds de l'ocean* rushing in to bring it down to a lower level."

The shipping trade has had its share of prosperity arising from the need for grain in Europe. Freights rose sharply, but, now that grain stocks have risen, there has been a declension in freights. These stocks, enlarged by the Russian export before prohibition, will be sent into

consumption, and then there may be again an upward movement in the freight market. In any case the better type of vessel seems to have full work before it, and that at rates that to it are remunerative; but the older "compound" steamships may find the difficulty. Freights are moderate enough to encourage the growth of over-sea trades; more trade may be done with parts of America than has been done in the past few months, and more ought to be done with the colonies and with Africa. The tonnage built has not been so large this year as it was last, and that year had also a slight fall on its predecessor.

ELEVEN YEARS' RISE AND FALL IN BUILDING.

It may now be interesting to give an approximate total of the shipbuilding of the Kingdom in the year, and this may be fitly tabulated in the form we have previously adopted:

Year.	Total production reported.	Year.	Total production reported.
	Tons.		*Tons.*
1881	1,000,000	1887	578,663
1882	1,200,000	1888	903,687
1883	1,250,000	1889	1,332,889
1884	750,000	1890	1,279,077
1885	540,422	1891	1,209,904
1886	473,675		

But, though the decrease seems small, an examination of the detailed list of launches will show that in ocean-going steamers it is more apparent. There is a large number of trawlers, tugs, and other river craft, and the proportion of these to the tonnage is larger, we believe, than in recent years, so that the ocean-going steamers are less than at first appears. The statement of the rise and fall is that of the shipbuilding of the United Kingdom. The returns we give of foreign builders' production illustrate the growth of the industry there; but though we have returns from America, Austria, Germany, Norway, and other parts, it is practically impossible in a time limited to days to compass shipbuilding in parts as far away as Japan. Still, the bulk of the shipbuilding of the world is done in the United Kingdom. Its immediate prospects are fair, and the fluctuations of that uncertain factor—the freight market—will determine them afterwards.

PALATIAL HOTELS AFLOAT.

There have been fewer of what have been called the "palatial floating hotels" built this year than in recent years. Last year our lists showed the *Normannia* and the *Dunnottar Castle*, built on the Clyde, the former of which was of 8,248 tons; whilst in 1889 there were included in our list from Clydebank the *Frieslander*, of 7,116 tons, and in the list of Harland & Wolff, of Belfast, the *Teutonic* and the *Majestic*, each of 9,685 tons. But the *Scot* is one of this year's products, and alike on the Clyde, at Belfast, and on the Tyne there have been magnificent vessels built.

OVERPRODUCTION.

We have heard little of late of "overbuilding" in the shipping trade. The reason is not far to seek. There were steamers laid idle in many of our ports in autumn, but the change in the prospects of the grain trade, the rush of the European nations to secure wheat, and the further fevered anxiety to get wheat, rye, and other grain out of Russia have for the time being changed all that—but for the time being only. In a month or so after that demand for grain and for tonnage to carry the grain showed itself the idle steamers were taken out of the tiers and put to work that was more or less profitable; and after that came the strike of miners in France, which gave a sharp stimulus to the coasting trades. Shipping is an industry that speedily balances itself. Vessels were drawn out of the Baltic trade, out of the coasting and

other trades, and sent to the Black Sea, to the United States, and to other parts; and the trades they were drawn out of benefited by their absence, but it was a relief that was temporary. The grain markets are flooded with Russian wheat and with that from America, and hence freights have fallen, but not to the old level. Some of the older vessels will find it difficult to make ends meet at the lower freights; there may be renewed laying up of some of these, and then the cry of overproduction or of overbuilding will be raised. But it is not the new, economically working ships that are laid idle, it is those of older type, consuming much coal; and the problem is not so much how to check building as how to find profitable work for the old vessels that linger on the stage of the sea after their economic usefulness is gone. The new vessels, it is true, crowd out the old ones, but it is a lesson that every industry and many a human history shows—it is akin to the survival of the strongest.

CHEAPER COAL.

One factor will work in favor of the steamship in the coming year—the coal that they use so largely will be cheaper. Sir Thomas Sutherland has estimated the saving to the Peninsular and Oriental Steam Navigation Company from this source at £40,000 for the year. It is known that some contracts for bunker coal have been placed for next year at about 2*s.* per ton below those for the year that is so near its end, and thus with a consumption of coal measured by hundreds of tons monthly the importance of that reduction in cost to the shipping trade is evident, and the accuracy of the estimate of Sir Thomas Sutherland is shown. The fall in the price of coal will work in two ways for the benefit of the shipping trade: it will reduce the working expenses in a considerable degree, and, by lessening the cost of production of many articles, it should in the end tend to increase the tonnage of goods that is sent over the seas. Whether other items of the cost of working steamships will in like manner be reduced remains to be seen, but the employment of the old vessels can only be profitably secured by the ability to work cheaper or the increased demand for tonnage to carry freight that in the end forces up rates, or by both.

A COMING COMPETITOR IN SHIPPING.

There is the probability of a coming competitor in shipping, for the United States is becoming restive at finding that all its goods are practically carried to Europe by the fleets of other nations; and in some way or other it will try, it seems probable, to raise a fleet of merchant vessels, just as it has been building a navy. Possibly the coming electoral disputes in that country may postpone for a year or two the decision, but it seems one of the things that loom ahead, and that will force us to consider how our steamers can work cheaply enough to compete with the vessels that the United States will seek in some way to "protect." There is open competition on the seas, and the bounty system has failed with France; but America approaches it in another fashion, and the shipowners of Great Britain will need to watch every move that on the chessboard of the politics of the United States is made. It is a difficulty that is ahead, that has been clearly indicated by the passing of the postal subsidy act by the last Congress; but one which is lessened by the fact that the surpluses of the United States have been frittered away by lavish pensioning. Still, the temper of the politicians of that great country is shown, and to meet a competition that seems to be coming the shipowners will need cheaper working. There is a continuous growth in the over-sea traffic of the world, and the competitors who can carry cheapest and quickest have the greatest likelihood of being able to secure the largest share of that trade which has been so valuable in the past and is still of such importance to this country.

THE TYNE.

This year's returns of the shipbuilding on the Tyne show a decrease of 49,695 tons as compared with 1890. The increased output of the Tyne yards, which commenced in 1887 after a year of unusual depression, was maintained till the close of 1889; but last year there

was a falling off to the extent of between 40,000 and 50,000 tons. The decrease is still apparent this year, the figures showing that the total for 1891 is 49,695 tons less than last year. On the whole, however, the yards have been fairly well employed, and several builders' returns show a substantial increase on the year as compared with 1890. On the other hand, some of the larger yards report a lessened output. The unfortunate dispute between the engineers and plumbers in the spring and early summer months doubtless was a contributory cause of the decline in the tonnage set afloat on the Tyne. It is a fact that large numbers of hands were idle pending the arrangement of the points in dispute, and that work was delayed in consequence. Then, in the beginning of the autumn, there was a general slackness of trade, and in some cases orders were worked out before fresh contracts were secured. The rise in the freight market which subsequently took place, however, gave an impetus to the shipbuilding trade, and several orders were booked. The work is now in progress, and several of the vacant berths are again resuming their wonted appearance. While there is a fair prospect for the next few months at some yards, there is still room for improvement before it can be stated that the shipbuilding industry has entirely resumed its former briskness. The vessels launched during the past year have been of a varied description, including several cruisers, passenger and cargo boats, oil-tank steamers, and fishing and towing vessels. The larger type of vessels have been built entirely of steel, while iron has been chiefly used in the construction of the smaller class. Steamers for towing and fishing purposes form an important item in this year's return, and it is in this kind of steamer that iron still continues to be the material principally employed.

The firm of Palmer's Shipbuilding and Iron Company (limited) heads the list with a total output of 30,297 tons. The whole of the vessels were of steel. The subjoined table shows the tonnage built by this company during the past forty years:

Years.	Tonnage.	Years.	Tonnage.
1852	920	1872	12,810
1853	3,539	1873	22,017
1854	7,459	1874	25,057
1855	5,169	1875	15,849
1856	7,531	1876	8,635
1857	6,816	1877	16,235
1858	7,625	1878	23,470
1859	11,894	1879	36,080
1860	4,653	1880	38,117
1861	4,751	1881	50,192
1862	21,493	1882	60,379
1863	17,096	1883	61,113
1864	22,896	1884	28,911
1865	31,111	1885	25,057
1866	18,973	1886	20,725
1867	16,555	1887	19,324
1868	15,842	1888	47,076
1869	11,900	1889	64,669
1870	26,129	1890	45,312
1871	19,267	1891	30,297

The return this year shows a reduction of two vessels and of over 15,000 tons. The list includes the twin-screw cruisers *Rainbow* and *Retribution* and three splendid clipper steamers for the Italo-Britannico Mail Steamship Company. The number of vessels launched this year is twelve, the tonnage amounting to 30,297 tons; last year there were fourteen vessels launched of a total of 45,312 tons. There are two large ironclads in course of construction at the Jarrow yard, and the Howdon yard has been restarted. The hulls of the ironclads are well advanced.

The firm of Sir W. G. Armstrong, Mitchell & Co. have this year launched sixteen vessels of various descriptions. Two of them were for the British Government, namely, the *Assaye*,

564 tons, and the *Spartan*, 1,906 tons. Both were built of steel, and the *Assaye* was fitted with engines of 4,500-horse power, while those of the *Spartan* were 9,000-horse power. Two others were steam launches, of 13 tons each, built of wood, and one was a composite vessel of 29 tons. The remainder were steel steamers for British and foreign owners. The total output of the firm this year is 30,088 tons, against thirteen vessels of 28,110 tons in 1890, being an increase of three vessels and 1,978 tons.

Messrs. John Readhead & Sons have put into the water 25,651 tons, which is fully 2,000 tons above their tonnage for last year. This firm will, with the new year, open a large new graving dock, closely adjoining their present establishment, which has been fitted up in every respect with pump and machinery of the most improved character to secure dispatch and economy.

The return of Messrs. C. S. Swan & Hunter, Wallsend, occupies a prominent position in the list. The work of the firm during the past year, although showing a decrease of tonnage launched as compared with 1890, has been of a very varied character. There have been launched seven steamers, five built of steel and two of iron, and one large steel sailing ship. The return also includes a patent barge, the first vessel built on Holzapfel's patent hydraulic flanged principle, and a large pontoon dock. The output in tonnage is 21,949 tons, as compared with 26,454 tons in 1890. The iron steamers above referred to are the first built of that material by Messrs. Swan & Hunter since 1885.

The output of Messrs. Wigham Richardson & Co., Low Walker, shows a decrease on last year of 986 tons. Altogether they have built and engined ten steel steamers of 13,592 tons and engined six others. Three of the steamers were fitted with twin-screw propellers. Last year the firm built and engined nine steamers of 14,578 tons, so that the average size of the vessels built this year is about 260 tons less than those launched in 1890. There is a good deal of work in hand, several vessels being alongside the yard fitting out and others on the stocks in course of construction.

Messrs. Hawthorn, Leslie & Co. launched 13,254 tons. In addition this company has done a large amount of repairing work during the year, including the reconstruction of the steamship *Czaritza* for foreign account, which was transformed into a first-class passenger steamer elaborately fitted out. The company's dry dock has also been well employed, vessels having been docked during the year representing over 107,000 gross tonnage.

Messrs. W. Dobson & Co., Low Walker, have launched seven steamers with a total gross register of 13,204 tons. The number is the same as last year, but there is an increase in the tonnage of 2,766 tons. The berths at this yard continue to be occupied.

The Tyne Iron Shipbuilding Company, Willington Quay, have launched seven vessels of 12,321 tons gross register, as compared with eight steamers of 18,016 tons last year. The reduction is one in number and 5,695 in the amount of tonnage. There are two or three vessels in course of construction.

Edwards's Shipbuilding Company (limited), Howdon, have launched six steamers, all built of steel, and, with one exception, for English owners. The tonnage amounts to 10,330 tons, as compared with 10,450 tons last year, a decrease of only 120 tons. The number of vessels built was the same as in 1890. The largest of the steamers launched this year was the *Benwell Tower*, of London, a magnificent vessel of the clipper stem type, of 3,250 tons register, and having engines of 1,800-horse power. One vessel was over 2,000 tons, and two others were between 1,500 and 2,000 tons. The remaining two were 620 and 650 tons, respectively.

Messrs. Wood, Skinner & Co., Bill Quay, have launched four steel steamers having a gross register of 3,242 tons. Compared with last year, this is a reduction of six vessels launched and of 6,823 tons in the total output. The amount of tonnage this year is, indeed, less than a third of what it was in 1890, and shows that the yard has not been fully employed during the past twelve months. Several vessels are now in course of construction, and there is a better prospect for next year.

Messrs. R. Stephenson & Co. (limited), Hebburn, have only launched one vessel this year. The tonnage is returned at 3,523 tons.

The return of Messrs. Hepple & Co., North Shields, shows that the firm this year has launched twelve vessels of 1,522 tons register, as compared with six vessels of 790.48 tons in 1890. As in the last return, so in this, the whole of the vessels have been built of iron, a circumstance which goes to show that this material still holds a good place in the opinion of owners of vessels intended for towing and fishing. The increase is a very substantial and satisfactory proof that the Tyne is still to the front in the construction of tug steamers, though the change from wood to iron is almost as marked in this class of property as in the case of the larger cargo-carrying vessels.

Messrs. J. T. Eltringham & Co., South Shields, have doubled their output of 1890, both in the number of vessels launched and in the amount of tonnage. The return for this year shows that iron is still in favor for certain classes of vessels—in this instance fishing steamers. Of the ten vessels launched nine were built of iron and one of steel. The latter was for Belgian owners and was the largest of the vessels built by the firm this year. The remainder were for Shields (seven), Sunderland (one), and Aberdeen (one). The tonnage launched this year amounts to 1,427 tons, as against 658 tons in 1890, an increase of 769 tons.

Ten vessels—nine iron and one steel—have been launched this year by Messrs. J. P. Rennoldson & Sons, South Shields. This is an increase of five vessels and of 757 tons over the output of last year. The vessels included the powerful steam tender *Ireland*, which is now engaged in conveying the mails to and from the large Atlantic steamers; a steam ferry for the River Tees, and several large boats for towing and other purposes. The almost exclusive use of iron in the construction of vessels at this yard is another indication that steel has not yet entirely taken its place.

At Scotswood the shipbuilding yard has been reopened during the year, and two steel steamers—the *Labrador*, of Montevideo, and the *Nordkap*, of Frederickstad—have been launched. It is now six years since there was a return from this yard, when Messrs. Campbell, Macintosh & Bowstead were the occupiers. In 1885 their output was 1,252 tons. This year the new firm, known as the Scotswood Shipbuilding Company, have a return of 988 tons.

The Tyne General Ferry Company, besides reducing the fares, have added greatly to the comfort and convenience of the passengers during the year. Three large and handsomely fitted saloon steamers, all built of steel at the company's yard at St. Peter's, have been added to the fleet within the past twelve months. The new boats are the *May*, the *Mabel*, and the *Eleanor*. The well-known passenger boat *Charles Attwood* is about to be converted into a saloon-deck steamer. The total tonnage of the three new steamers is 265 tons. Last year there was no return, and in 1889 the launches amounted to 169 tons.

The total launches on the Tyne in 1891 aggregate 185,367 tons, and the following returns complete the detailed lists:

Table showing the vessels launched on the Tyne in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Palmer's Shipbuilding and Iron Company (limited):			*Tons.*	
Rainbow	Sheathed twin-screw cruiser.		1,800	9,000
Retribution	do		1,800	9,000
Feliciana	Steel, steam	Glasgow	2,921	1,460
Francesco Crispi	do	Napoli	2,579	2,550
Silvio Spaventa	do	do	2,577	2,600
Principe di Napoli	do	do	2,154	2,500
Carlo Poerio	do	Palermo	2,154	2,500
Ruggiero Settimo	do	do	2,154	2,500
Lady Armstrong	do	Greenock	3,218	1,500
Cresswell	Steel, steam	Newcastle	2,029	1,250

Table showing the vessels launched on the Tyne in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Palmer's Shipbuilding and Iron Company (limited)—Continued.				
Ratho	Steel, steam	Liverpool	4,246	1,800
Paraskevi Vlassopulo	do	Braila	2,650	1,300
Total			30,292	37,960
Sir W. G. Armstrong, Mitchell & Co. (limited), Newcastle-on-Tyne:				
Assaye	Steel, steam	British Government	564	4,500
Spartan	do	do	1,906	9,000
Nijni Novgorod	do	Foreign	3,130	1,600
Neko	do	do	3,661	2,000
Ruthenia	do	British	5,305	3,300
Lucania	do	do	5,305	3,300
Weehawken	do	do	2,784	1,350
Van	do	Foreign	633	500
Moush	do	do	632	500
Aral	do	British	2,826	1,406
Continental	do	Foreign	1,063	550
Para	Composite, steam	do	29	145
Steam Launch	Wood, steam	do	13	53
Do	do	do	13	35
Venus	Steel, steam	do	1,117	1,300
Mercurio	do	do	1,117	1,300
Total			30,088	30,828
John Readhead & Sons, South Shields:*				
Salisbury	Steel, steam	South Shields	1,806	950
Waterville	do	North Shields	1,967	956
Bjorgvin	do	Bergen	2,795	1,553
Southgarth	do	North Shields	2,431	1,352
Ethelgonda	do	Whitby	2,691	1,383
Romsdal	do	South Shields	2,068	1,074
Tregurno	do	St. Ives	2,431	1,350
Ethelaida	do	Whitby	2,669	1,392
Trevanion	do	St. Ives	2,437	1,350
Isle of Ramsey	do	Liverpool	1,707	1,074
Trewedden	do	St. Ives	2,664	1,350
Total, with fractions			25,651	13,589
C. S. Swan & Hunter, Wallsend:				
Calvin	Steel, steam	London	2,578	1,100
Nottingham	Iron, steam	Grimsby	980	1,450
Staveley	do	do	980	1,450
Chancellor	Steel, steam	Liverpool	4,763	2,700
Essequebo	do	Demerara	202	350
Elginshire	do	Glasgow	4,580	2,400
Flottbek	Steel, sail	Hamburg	1,989	.....
Ashdown	Steel, steam	London	2,897	1,400
No. 2 Pontoon Dock		Tyne	2,900	.....
Caisson		Demerara	.....	.....
Patent barge		London	90	.....
Total			21,949	.....
Wigham Richardson & Co., Walker:				
Rio Formosa	Steel, steam (twin screw).		611	690
Northumberland	do		1,256	2,600
Pelotas	do		1,613	2,200
Woolloomooloo	Steel, steam		3,522	2,400

*All these vessels were fitted with engines and boilers also built by John Readhead & Sons.

Table showing the vessels launched on the Tyne in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Wigham Richardson & Co., Walker—Continued.			*Tons.*	
Urania	Steel, steam		1,111	1,700
Astræa	do		1,119	1,700
Ban Poh Guan	do		925	900
Lascar	do		1,729	900
Hesperides	do		820	1,200
Carola	do		886	1,150
Cape Comino	Steam, engined only			1,000
Labrador	do			700
Yarrawonga	do			2,400
Wallarah	do			2,400
Castle Eden	do			1,200
Abendana	do			1,100
Total			13,592	27,300
R. & W. Hawthorn, Leslie & Co., Hebburn:				
Assu	Steel, steam		1,186	500
Upanema	do		814	500
Aguamare	do		1,189	500
Santos	do		1,656	2,000
Saratov	do		5,309	10,000
G. D. Constantine	do		2,100	2,500
Pallas	do		1,000	1,300
H. M. S. Æolus	Twin screw, engines only.			9,000
H. M. S. Brilliant	do			9,000
Ruthenia	do			4,000
Lucania	do			4,000
Flamsteed	Single screw, engines only.			1,700
Total			13,254	45,000
W. Dobson & Co., Low Walker:				
Eiffel Tower	Steel, screw	London	3,187	1,450
Cairnglen	do	Newcastle	1,565	800
Port Albert	do	London	4,140	3,300
Naderi	do	Bombay	1,878	1,150
Hebble	do	Goole	904	1,150
Minister Tak van Poortvliet	do	Flushing	765	930
Prof. Buys	do	do	765	930
Total			13,204	
Tyne Iron Shipbuilding Company (limited), Willington Quay:				
Cragg	Steel, steam	Newcastle	666	420
Cape Comorin	do	do	2,597	1,350
Cape Corrientes	do	do	2,598	1,350
Cape Comino	do	do	2,600	1,350
Eastham	do	do	555	420
Not named	do	do	555	420
Abendana	do	do	2,750	1,500
Total			12,321	6,810
Edwards's Shipbuilding Company (limited), Howdon-on-Tyne:				
Montague	Steel, steam	Lynn	650	460
San Antonio	do	Manilla	620	500
Œnotria	do	Newcastle	1,984	900
Jessica	do	Hull	2,278	1,000

Table showing the vessels launched on the Tyne in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Edwards's Shipbuilding Company (limited), Howdon-on-Tyne—Cont'd.			*Tons.*	
Benwell Tower	Steel, steam	London	3,250	1,800
Harlyn	do	do	1,550	800
Total			10,330	5,460
R. Stephenson & Co. (limited), Hebburn:				
Glenesk	Steel, steam	Glasgow	3,523	2,100
Messrs. Wood, Skinner & Co., Bill Quay:				
Cheviot	do	Newcastle	258	230
Tynemouth	do	do	839	660
Dordrecht	do	Rotterdam	1,798	1,020
No. 33	do	London	347	195
Total			3,242	2,095
Schlesinger, Davis & Co., Wallsend-on-Tyne:				
Londoner	Steel, steam	British	1,513	2,700
City of London	do	do	340	300
Total			1,853	3,000
Hepple & Co., North Shields:				
Nellie	Iron, steam	Aberdeen	112	40
Pansy	do	North Shields	112	40
Barton	do	Hull	112	52
Volunteer	do	South Shields	112	43
J. M. Smart	do	North Shields	113	43
Parramatta	do	Hull	143	60
Valetta	do	do	144	60
Britannic	do	do	144	60
Germanic	do	do	144	60
Burmah	do	do	144	60
Adriatic	do	do	144	60
Secret	do	London	95	43
Total, with fractions			1,522	621
J. P. Rennoldson & Sons, South Shields:				
Ireland	Iron, steam	Glasgow	244	425
Dolphin	do	Boston	137	225
Conger	do	do	139	225
Sturgeon	do	do	138	225
Goole, No. 8	do	Goole	149	380
Flying Witch	do	Glasgow	142	353
Flying Wizard	do	do	142	353
Queen of the Tees	do	Stockton	50	105
Vulcan	do	Hamburg	184	450
No. 137	do	Waterford	150	350
Grassholm	Steam, engines only			350
Total, with fractions			1,479	3,441
James T. Eltringham & Co., South Shields:				
Countess	Iron, steam	Aberdeen	112	230
Lionel	do	North Shields	126	250
Ella	do	South Shields	112	225
Schaldis	Steel, steam	Antwerp	304	230
Amy Gertrude	Iron, steam	North Shields	110	190
Ocean Prince	do	do	127	250

Table showing the vessels launched on the Tyne in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
James T. Eltringham & Co., South Shields—Continued.			*Tons.*	
Black Prince	Iron, steam	North Shields	127	250
Grassholm	do.	do.	142	320
Primrose	do.	do.	135	260
Marion	do.	Sunderland	128	200
Total, with fractions			1,427	
Scotswood Shipbuilding Company, Scotswood:				
Labrador	Steel, steam	Montevideo	462	100
Nordkap	do.	Fredericksted	526	110
Total			983	210
Anderson & Laverick, Mushroom-on-Tyne:				
Tyne Fisher	Iron, steam	North Shields	121	300
Tyne Wave	do.	do.	121	300
Pacific	do.	Aberdeen	140	300
Total			382	900
Tyne General Ferry Company, St. Peter's:				
May	Steel, steam	Newcastle	85	40
Mabel	do.	do.	90	40
Eleanor	do.	do.	90	39
Total			265	119

Table showing six years' production on the Tyne.

Builders.	1886.	1887.	1888.	1889.	1890.	1891.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Palmer & Co.	20,728	19,324	47,076	64,669	45,312	30,297
Hawthorn, Leslie & Co.	14,472	10,573	27,830	22,536	19,683	13,254
J. Readhead & Co.	6,987	13,614	23,045	26,182	23,599	25,651
Armstrong, Mitchell & Co.	21,076	24,980	32,541	34,415	28,110	30,088
W. Richardson & Co.	5,578	7,632	15,875	20,353	14,578	13,592
Edwards & Sons	376	640	4,894	6,000	10,450	10,330
R. Stephenson & Co. (limited)	.....	.....	10,173	20,527	15,795	3,523
William Dobson & Co.	3,418	2,660	9,046	12,501	10,438	13,204
Swan & Hunter	4,685	14,614	18,320	28,312	26,454	21,949
Tyne Iron Shipbuilding Company	3,417	4,944	12,211	15,547	18,016	12,321
Schlesinger, Davis & Co.	141	2,163	5,296	13,029	7,867	1,853
T. & W. Smith	201	226	.....	7,101	2,355	(*)
Hepple & Co.	310	.....	431	536	790	1,582
J. T. Eltringham	526	499	891	947	658	1,427
Tyne General Ferry Company	.....	77	.....	169	.....	265
Wood, Skinner & Co.	535	2,338	5,326	8,892	10,065	3,242
J. & C. Winlo	.....	.....	30	.....	.....	.....
J. P. Rennoldson & Sons	141	.....	.....	79	722	1,479
L. Liddle	95	.....	.....	.....	.....	.....
North Marine Engineering Company (limited)	.....	12	70	4	.....	.....
Thomas Brown	.....	.....	150	.....	64	.....
Teams Shipyard	.....	.....	.....	.....	100	.....
Anderson & Laverick	.....	.....	.....	.....	.....	382
Total	82,760	104,296	213,205	281,710	235,062	185,367

* Half of pontoon only launched.

T. & W. Smith, North Shields, launched the first half of a pontoon dock for their own use, to lift vessels 365 feet long.

BLYTH.

Blyth last year built ten vessels of 7,377 tons; this year it has built six vessels of 7,005 tons. The Blyth Shipbuilding Company have turned off this year five vessels of 6,973 tons and the Union Coöperative Shipbuilding Company one of 32 tons.

Table showing launches by the Blyth Shipbuilding Company, Blyth.

Name.	Description.	Port of registry.	Gross register.	Horse power.
			Tons.	
Croft	Steel, steam	Newcastle	2,674	1,200
Cairnie	Iron, steam	Aberdeen	240	290
Kilmorack	Steel, steam	Newcastle	2,090	1,019
Mandarin	....do	London	1,867	1,375
Hopper barge	Iron	Workworth Harbor	102	.....
Total	.....	.....	6,973	3,884

In addition to the shipbuilding during the year, this company has also had steamers and sailing ships representing about 100,000 gross tonnage in their graving dock undergoing overhaul and repairs and are at present making a second large graving dock, which will be opened next year.

The Union Coöperative Shipbuilding Company, Blyth, launched the *Crystal Stream* (wood, steam), the port of registry being Blyth. It is of 32 gross tons register and 10-horse power. This vessel is intended for a water boat, to supply fresh water to shipping in Blyth.

THE WEAR.

Shipbuilding operations on the Wear during 1891, although showing a slight decrease on its predecessor, have been particularly satisfactory, and certainly surpass, after the long-continued run of prosperity, all expectations, as the outlook in January last was not so bright. The thirteen firms engaged in this particular industry have turned out within the past twelve months eighty-nine vessels of a gross registered tonnage of 192,114 tons, as compared with eighty-eight vessels and 197,430 tons in 1890. Thus the total number of vessels launched will show an increase of one as against the number last year, but a decrease of 4,757 in the tonnage. The average tonnage of the vessels built is 2,159 tons, as against 2,236 tons in the previous year. A feature of the year's work is the construction of no less than twenty-two large sailing vessels, the aggregate tonnage of which amounts to 38,608 tons. In 1889 there were four sailing vessels floated of 4,630 total tonnage, and last year three of larger size were built, representing a total tonnage of 6,507 tons.

Messrs. J. L. Thompson & Sons, North Sands yard, have launched twelve vessels representing an aggregate gross tonnage of 32,145 tons, being an increase of 1,684 tons on last year's record. This year the average size of the steamers launched has been over 2,685 tons. Two of these even reached the unusual tonnage of 4,000 tons. These were the *Port Chalmers* and the *Yarrawonga*, both built expressly for the Australian trade and both fitted in such a way as to carry a large number of passengers and emigrants. The two vessels in themselves are not only a credit to the builders, but to the port at large.

Messrs. W. Doxford & Sons, Pallion, find themselves in the same position as last year, viz, second on the list. Their total, however, is less, being eleven vessels of 27,134 tons, as against nine of 28,386 tons in 1890. Their list this year is notable from the fact that five of their vessels are large sailing ships, some of which are rigged with four masts. The *Manchester* and the *Houresfeld* are sister ships and are two of the largest sailing craft afloat.

The three "Clan" steamers built for a Glasgow firm are finely modeled vessels and can not fail to bring credit to their builders.

Messrs. Short Brothers present a decrease on their last year's total of 1,562 tons, the number of vessels built being ten as against eleven in the previous twelve months. The total, however, is respectable, reaching altogether to 23,475 tons. The vessels were all steamers and were all built for the carrying trade. They entail no description, except that they are splendidly adapted for the purposes required, and all bear evidences of the beauty of model for which Messrs. Short are famous.

Mr. James Laing, of the Deptford yard, has constructed seven vessels at his well-known establishment, the total tonnage reached being 20,741 tons. This is only 1,960 tons less than last year's figures, although two vessels less were put off the stocks. Amongst those launched stand out prominently the *Minna Craig* and *Port Douglas*, two splendid vessels, whose heavy cost has brought out all the strength and beauty of workmanship for which Mr. Laing has so long been renowned.

The Sunderland Shipbuilding Company (limited) has built seven vessels of a total tonnage of 16,927 tons, being an increase of 1,212 tons on 1890. The company launched the *Braunfels*, being the tenth steamer built by them for the Hansa Steamship Company, of Bremen. The vessel is constructed upon the web-frame principle, thus dispensing with hold beams. She has accommodation for a few first-class passengers. The *Wallarah*, turned out by them, is another fine steamer built to the order of William Lund, esq., of London, and is 360 feet long.

Messrs. Bartram, Haswell & Co. are in the happy position of being able to report an increase. They have launched during the year five good-sized steamers, which, besides being one more than last year, present a total tonnage which is even larger than that of 1889. The tonnage turned out this year amounts to 12,533 tons, as against 10,013 tons in 1890.

Messrs. Pickersgill & Sons, of Southwick, have come within 90 tons of their total in 1890, when with five vessels of 12,123 tons they presented a fairly good average. This year their total is distributed amongst six vessels instead of five; but, four being sailers, the comparatively small aggregate will thus be explained.

Messrs. Blumer & Co. have launched during the year nine vessels of 12,006 tons. Six of these are sailers and give Messrs. Blumer the honor of having launched during the year the largest number of this class of vessel in any yard in the port. Indeed, it is doubtful whether so many sailing ships have been launched from one yard on the Wear in the same space of time for a very considerable time past.

Messrs. R. Thompson & Sons, of Southwick and the Bridge Dockyard, have put into the water eight vessels having an aggregate tonnage of 11,695 tons. In the previous year the total amount of tonnage reached 11,377 tons, contributed by seven vessels. The firm seems to have benefited to a fairly good extent by the marked demand for sail tonnage which has shown itself during the year. The sailing vessels built numbered five, the largest, the *Eulomene*, being a magnificent four-masted craft of a gross registered capacity of almost 3,000 tons.

At Castletown Messrs. Priestman & Co. have built five vessels of 9,271 tons, a decrease of one vessel and 1,256 tons when compared with the output last year. Some time ago the firm had the misfortune to have partially destroyed by fire their passenger steamer *Menatia*, which at the time was just about completed.

Messrs. Osborne, Graham & Co., North Hylton, built four vessels during the year, the total tonnage being 8,051 tons. The aggregate tonnage last year was 6,098 tons, the vessels launched being the same in number but greatly less in size.

Messrs. Austin & Sons of the Wear dockyard, have launched four vessels of 4,468 tons, as against three with a tonnage of 5,978 tons in the previous year. The firm, which was established in 1829, are now making extensive additions to their establishment, which, when completed, will present an unbroken river frontage of about 1,100 feet. The shipbuilding yard, quay berths, and graving dock (308 feet in length) cover about 5 acres of ground below the

bridge, and the additions, when completed, will enable the firm to meet the demand for the construction of vessels of a larger class than hitherto. A large and steady business is done in the building and repairing of steam and sailing vessels of every description.

The Strand Slipway Company have only launched one vessel, against three last year, the total tonnage being 1,535 tons, as compared with 3,129 tons. What, however, the firm have lacked in building they have made up in the large amount of repairing.

Up to the end of April there were seventeen or eighteen steamers having an aggregate tonnage of something like 28,000 tons laid up in the river and docks. Nearly all of these were locally owned, and since the time mentioned, freights having opened out somewhat more remuneratively, this idle tonnage has gradually been called into requisition, there being only two or three vessels now lying dormant.

The number of hands finding employment in the Wear shipyards is at present estimated at about 11,000. Running concurrently with the shipbuilding is the marine engineering, and in connection with the different branches of this industry, including the manufacturers of steam winches and steering gear, fully 6,000 hands will find employment. Most of the leading works have carried on operations night and day, and, although at the present time the pressure is not quite so great; work is being fairly maintained.

Table showing the vessels launched on the Wear in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Joseph L. Thompson & Sons, Sunderland:			*Tons.*	
Casos	Steel, steam	Liverpool	2,240	180
Epworth	do	Whitby	2,404	190
Moorgate	do	London	2,363	230
Loughrigg Holme	do	Maryport	2,069	180
Cabo San Vicente	do	Sevilla	1,817	130
Port Chalmers	do	London	4,154	600
Tarragona	do	Newcastle	2,039	140
Yarrawongo	do	London	4,011	500
Springwell	do	Sunderland	3,030	220
Red Jacket	do	Cardiff	2,088	200
White Cross	do	Whitby	3,030	250
Mohican	do	Liverpool	2,900	250
Total			32,145	
William Doxford & Sons (limited), Sunderland:				
Homesfeld	Steel, sail	Liverpool	3,045	
Clan Macneil	Steel, steam	Glasgow	2,487	1,500
Clan Macleod	do	do	2,516	1,500
Clan Macintyre	do	do	2,516	1,500
Nation	Steel, sail	Liverpool	2,550	
Andriana Stathatos	Steel, steam	Braila	2,497	1,300
Republic	Steel, sail	Liverpool	2,539	
Dominion	do	do	2,539	
No. 210	Steel, steam	Melbourne	900	700
Manchester	Steel, sail	Liverpool	3,045	
No. 212	Steel, steam	Braila	2,500	1,300
Total			27,134	
Short Brothers:				
Dunmarry	Steel, steam	Belfast	2,592	250
Ferndene	do	Newcastle	2,537	200
Sinclair	do	Hartlepool	655	80
Nerano	do	Sunderland	2,885	280
Verabus Unitis	do	London	2,137	200
Lord Londonderry	do	Sunderland	570	90

Table showing the vessels launched on the Wear in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Short Brothers—Continued.			*Tons.*	
Helen	Steel, steam	Belfast	3,169	250
Nerito	do	Sunderland	2,920	280
Kaffir Prince	do	Newcastle	2,450	160
Munificent	do	Sunderland	3,560	280
Total			23,475	
James Laing:				
Venango	Steel, steam	Sunderland	2,938	300
Minna Craig	do	London	4,644	450
Petersburg	do	Leith	1,713	100
Port Douglas	do	London	4,285	600
Deptford	do	Sunderland	2,594	300
Titan	do	Amsterdam	967	110
No. 507	do	Sunderland	3,600	300
Total			20,741	2,220
Sunderland Shipbuilding Company (limited), Sunderland:				
Braunfels	Steel, steam	Bremen	3,070	1,500
Wallarah	do	London	3,504	2,500
Regnant	do	Liverpool	1,942	1,000
Regimen	do	do	1,942	1,000
Empress of the East	do	London	3,095	1,500
Robert Thorman	do	Sunderland	937	800
Fort Stuart	Steel, sail	Liverpool	2,434	
Total, with fractions			16,927	8,300
Bartram, Haswell & Co.:				
Ludgate	Steel, steam	London	2,423	230
Queen Adelaide	do	Glasgow	2,832	310
Queen Anne	do	do	2,784	310
Wanhanset	do	Liverpool	2,684	350
La Givalda	do	Cadiz	1,820	200
Total			12,533	1,400
W. Pickersgill & Sons, Sunderland:				
Highlander	Steel, steam	Whitby	2,490	200
Celtic Queen	Steel, sail	Liverpool	1,830	
Alma	Steel, steam	Sunderland	2,464	190
Dovenby	Steel, sail	Liverpool	1,654	
Verbena	do	do	1,821	
Celtic Race	do	do	1,874	
Total			12,133	
John Blumer & Co., North Dock, Sunderland:				
Virginia Peirano	Steel, steam	London	2,098	170
Sydmonton	do	Whitby	2,526	200
Ornen	do	Stockholm	1,224	130
J. W. Burmester	Steel, sail	Hamburg	1,299	
Kronprinds Frederik	do	Fano	664	
Kronprindsesse Louise	do	do	665	
Aalborg	do	do	665	
Wiscombe Park	do	Liverpool	2,800	
Hertha	do	Kolding	665	
Total			12,006	500

Table showing the vessels launched on the Wear during 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
R. Thompson & Sons, Sunderland:			*Tons.*	
Ben Wyvis	Steel, steam	Aberdeen	925	90
Ulricken	do	Bergen, Norway	2,408	180
Erna	Steel, sail	Elsfleth, Germany	1,075	.....
Loreley	do	do	1,075	.....
Eulomend	do	Liverpool	2,725	.....
Lota	do	Bristol	1,367	.....
F. E. Webb	Steel, steam	London	584	90
Windrush	Steel, sail	Sunderland	1,532	.....
Total, with fractions			11,695	.....
John Priestman & Co., Sunderland:				
Maria	Steel, steam	Andros	2,573	1,100
Grange	do	Chester	1,217	650
Godwit	do	London	1,682	650
Arthur Head	do	Stockton-on-Tees	2,909	1,050
Menapia	do	Waterford	890	1,000
Total			9,271	4,450
Osborne, Graham & Co., Sunderland:				
City of Worcester	Steel, steam	West Hartlepool	2,404	190
Usk	do	Cardiff	869	90
City of Gloucester	do	West Hartlepool	2,423	180
Kingswell	do	Newcastle	2,355	180
Total			8,051	640
S. P. Austin & Son, Wear Dockyard, Sunderland:				
Caradog	Steel, sail	Aberystwith	1,443	.....
Burma	Steel, steam	Goole	724	120
Amiral Cécille	do	Rouen	1,152	120
Denaby	do	Hull	1,149	120
Total			4,468	.....
Strand Slipway Company, Sunderland:				
Leafield	Steel, steam	Newcastle	1,535	130

Table showing six years' building on the Wear.

Builders.	1886.	1887.	1888.	1889.	1890.	1891.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
J. L. Thompson & Sons	16,058	21,823	35,121	30,543	32,040	32,145
James Laing	9,684	17,580	16,969	29,160	22,701	20,741
W. Doxford & Sons	3,592	13,163	14,038	24,150	28,386	27,134
Short Brothers	7,508	10,160	21,111	23,419	25,073	23,475
Sunderland Shipbuilding Company	2,412	5,245	11,186	23,565	15,715	16,927
Boolds, Sharer & Co.	4,250	2,300	.....	.....	.....	.....
J. Blumer & Co.	.....	2,853	5,820	15,296	14,270	12,006
Bartram, Haswell & Co.	2,515	2,744	7,180	11,917	10,013	12,533
W. Pickersgill & Sons	.....	2,733	6,846	7,950	12,223	12,133
Strand Slipway Company	2,182	1,830	2,158	7,481	3,129	1,535
S. P. Austin & Son	1,810	1,663	7,311	6,951	5,978	4,468
Osbourne, Graham & Co.	.....	1,150	4,000	10,692	6,098	8,051
R. Thompson & Sons	4,698	.....	8,668	18,175	11,377	11,695
North of England Shipbuilding Company	1,290	.....	.....	.....	.....	.....
Knox & Co.	700	.....	.....	.....	.....	.....
Priestman & Co.	.....	.....	1,992	8,037	10,428	9,271
Total	56,699	84,254	142,410	217,336	197,430	192,114

THE TEES.

At Middlesborough Sir Raylton Dixon & Co. have launched this year 38,597 tons, against 43,665 tons last year; Messrs. R. Craggs & Son have launched 4,030 tons, against 5,553 tons last year; and Messrs. W. Harkess & Son launched 2,900 tons, against 5,600 tons last year.

Table showing the vessels launched at Middlesborough in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Sir Raylton Dixon & Co., Cleveland Dockyards:			*Tons.*	
Angola	Steel, steam	British	2,870	1,000
Pembridge	do	do	2,935	950
No. 334	Iron, barge	do	315	.....
Dictator	Steel, steam	do	4,116	1,900
Oscar	do	Foreign	1,270	600
Endsleigh	do	British	2,366	720
Ethiopia	do	do	2,540	1,050
Dahomey	do	do	2,854	1,000
Aden	do	do	4,100	2,050
Cynthia	Iron, steam	do	133	300
Albion	do	do	133	300
Briton	do	do	134	300
Echo	Steel, steam	do	961	600
Helena	do	Foreign	1,414	600
Lark	Iron, steam	British	133	280
Fitzroy	do	do	132	280
Linnet	do	do	135	280
Canadian	do	do	134	280
Dominican	do	do	134	280
Exmouth	do	do	133	280
Atlantic	Steel, steam	do	2,478	900
Falmouth	Iron, steam	do	133	280
Tynemouth	do	do	133	280
Comus	do	do	133	280
No. 357	do		133	280
Baron Ardrossan	Steel, steam	British	2,905	950
No. 360	do	do	2,870	1,200
No. 361	do	do	2,870	1,200
Total			38,597	18,420
R. Craggs & Sons:				
Xania	Steel, steam	Christiania	508	330
Trouvor	do	Odessa	1,811	950
Patrator	do	London	591	350
Craggs	do	Christiania	522	315
Luarca	do	Gijon	110	120
Steam trawler	Iron, steam		144	250
Do	do		144	200
Manxman	do	Hull	56	220
Steam trawler	do		144	250
Total			4,030	3,036
W. Harkess & Son:				
Ivanhoe	Steel, steam		1,900	130
Jenny Rieth*	Steel, sail	Middlesborough	1,000	.....
Total			2,900	.....

*Petroleum barge for Rhine service.

In addition to the vessels built, Sir Raylton Dixon & Co. have been kept very busy with large repairing work in dry dock and on their hydraulic slip way. They have at present

nine steamers of large size on the stocks and three in the water fitting out, including a fine steamer for the Peninsular and Oriental Company.

From Stockton we have returns from the three builders, which show in two instances an increase in the output. Messrs. Ropner & Son launched last year 32,662 tons; this year they have put off the stocks 37,977 tons, and, as there are only four building berths in the yard, this is the excellent record of 9,494 tons register for each berth. This yard is to be extended. Messrs. Richardson, Duck & Co., South Stockton, launched 24,861 tons last year and this year 27,264 tons. Messrs. Craig, Taylor & Co. launched last year 15,398 tons and this year 9,364 tons. As a river, the Tees has launched: Last year, 127,739 tons; this year, 120,132 tons. Stockton has an increase of about 1,684 tons; but there is a heavier decrease at Middlesborough, and thus the Tees produces 7,607 tons less in 1891 than in 1890.

Table showing the vessels launched at Stockton in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Ropner & Son:*			*Tons.*	
Alton Tower	Steel, steam	London	2,948	230
Lammermoor	do	South Shields	2,955	230
Aymestry	do	West Hartlepool	3,049	250
Phyllis	do	do	2,429	240
Venus	do	do	2,940	200
Huntcliff	do	do	3,119	175
Kirkby	do	do	3,034	280
City of Wakefield	do	Newcastle	3,003	230
Norge	do	Bergen	3,124	230
Elwick	do	West Hartlepool	2,434	180
Axminster	do	London	1,905	140
Cyrus	do	West Hartlepool	3,367	240
Albion	do	do	3,670	250
Total			37,977	2,875
Richardson, Duck & Co., South Stockton Iron Shipyard:				
Sledmere	Steel, steam	Hull	1,970	150
Velleda	do	London	2,545	200
Crown of England	do	Belfast	2,574	200
Nutfield	do	London	2,566	200
Sidney Thomas	do	Stockton	2,557	200
William Anning	do	Cardiff	2,232	200
Loyal Briton	do	do	1,105	200
Oweenee	Steel, sail	Windsor, N. S.	2,432	.....
Muskoka	do	do	2,357	.....
Coralie	Steel, steam	Hull	2,920	250
Lucina	do	London	2,606	200
3 Thames barges	Iron	do	150	.....
1 hopper barge	do	Middlesborough	250	.....
Total			27,264	1,800
Craig, Taylor & Co:				
Highland Mary	Steel, steam	London	2,989	1,354
Highland Glen	do	do	2,974	1,211
Ortyga	do	do	2,133	720
Remedio	do	Newport (Monmouth).	1,268	500
Total			9,364	3,785

* The work done in this yard during the year 1891 has consisted almost entirely of large-sized cargo steamers of the most modern type, the thirteen steamers built having an average carrying capacity of 4,500 tons each.

Table showing six years' summary for the Tees.

Builders.	1886.	1887.	1888.	1889.	1890.	1891.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Richardson, Duck & Co.	5,276	6,920	18,669	21,585	24,861	27,264
Raylton Dixon & Co.	7,347	15,068	27,295	40,689	43,665	38,597
Ropner & Son	6,553	8,851	2,945	29,441	32,662	37,977
Craggs & Son	.....	.....	1,743	5,561	5,553	4,030
W. Harkess & Son	.....	.....	.....	2,700	5,600	2,900
Craig, Taylor & Co.	1,300	4,507	6,519	10,460	15,398	9,364
Total	20,476	33,346	57,171	110,436	127,739	120,132

WEST HARTLEPOOL.

At West Hartlepool last year the three builders launched in the aggregate 99,847 tons. This year they have put into the water 96,993 tons. W. Gray & Co. (limited) launched last year 64,253 tons; this year the firm have built 59,033 tons. Messrs. Furness, Withy & Co. (late Edward Withy & Co.) last year launched 26,024 tons; this year, 25,572 tons. Irvine & Co. have raised their output from 9,570 tons to 12,368 tons, despite a serious fire in March which caused a stoppage of work on steamers building for about two months. The port has thus practically maintained its position in the year.

Table showing the vessels launched at West Hartlepool in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
W. Gray & Co. (limited):			*Tons.*	
Blenheim	Steel, steam	Whitby	2,403	1,250
Gledhow	....do	London	2,661	1,300
Lincolnshire	....do	....do	2,682	1,300
Bramham	....do	....do	1,978	1,000
Harold	....do	West Hartlepool	1,735	1,000
Elmete	....do	London	1,991	1,000
Lesbury	....do	....do	2,663	1,300
Rothsay	....do	Cardiff	2,007	1,000
General Boyd	....do	Gibraltar	1,375	900
A. Chrisvoeline	....do	Syra	2,332	1,250
Holmlea	....do	West Hartlepool	1,781	900
Rhio	....do	Newport (Monmouth)	1,402	800
Inchbarra	....do	Liverpool	4,069	2,000
Hardanger	....do	West Hartlepool	2,421	1,250
Castleton	....do	Middlesborough	2,395	1,200
Mab	....do	Newcastle	2,833	1,300
St. Andrews	....do	Fonsberg	3,066	1,500
Westow	....do	West Hartlepool	2,283	1,200
Jessie	....do	....do	2,256	1,200
Ariadne	....do	London	1,993	1,000
Ruabon	....do	Cardiff	2,004	1,000
Hupeh	....do	London	2,819	1,300
Shantung	....do	....do	2,819	1,300
Spherside	....do	....do	1,950	1,300
Mount Stewart	....do	Seaham Harbor	760	800
Masonic	....do	Whitby	2,350	1,300
Total			59,033	30,650
Furness, Withy & Co.:				
Melbridge	Steel, steam	London	2,868	300
Castleventry	....do	West Hartlepool	2,994	275
Salopia	....do	London	2,404	200

Table showing the vessels launched at West Hartlepool in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Furness, Withy & Co.—Continued.				
Sydenham	Steel, steam	London	2,377	225
Wooler	do	do	2,403	2[illegible]
Rowtor	do	do	2,351	200
Zani Stefanovich	do	Piræus	2,333	200
Marietta Ralli	do	do	2,339	200
Honiton	do	London	2,523	230
Headlands	do	West Hartlepool	3,000	275
Total			25,592	2,305
R. Irvine & Co.:				
Chatfield	Steel, steam	London	2,931	200
Inchdune	do	Liverpool	2,905	300
Silvia	do	Grimsby	1,228	98
Emma	do	West Hartlepool	2,893	180
Norton	do	do	2,410	170
Total			12,368	

Table showing six years' summary for West Hartlepool.

Builders.	1886.	1887	1888.	1889.	1890.	1891.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
W. Gray & Co	13,117	30,243	50,307	58,731	64,253	59,033
Withy & Co	2,176	19,889	20,087	21,015	26,024	25,592
Irvine & Co		3,500	3,515	4,363	9,570	12,368
Total	15,293	63,632	73,909	84,109	99,847	96,993

THE HUMBER.

At Hull Earle's Shipbuilding and Engineering Company (limited) shows a large increase in the volume of business. In 1890 they put off the stocks 4,429 tons; this year the vessels they have launched aggregate 11,789 tons, the increase being due mainly to the inclusion of the man-of-war *Endymion*; but a larger number of iron vessels have been built for the Grimsby and Boston fishing trades.

At Beverley Messrs. Cochrane, Cooper & Schofield have built more vessels, mainly for Hull and Grimsby owners. In all their tonnage is 3,782 tons, or about 1,570 tons above last year's output. All the vessels they launched were of iron, and all are steamers.

Table showing the vessels launched on the Humber in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Earle's Shipbuilding and Engineering Company (limited), Hull:				
H. M. S. Endymion	Steel, steam	Portsmouth	7,350	12,000
Lutterworth	do	Grimsby	1,002	1,600
Leicester	do	do	1,002	1,600
Welsby	Iron, steam	do	120	350
Rector	do	do	120	350
Rodney	do	do	120	350
Hesto	do	do	135	330

Table showing the vessels launched on the Humber in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Earle's Shipbuilding and Engineering Company (limited), Hull—Cont'd.				
Naalso	Iron, steam	Grimsby	135	330
Brothertoft	do	Boston	155	300
Wigtoft	do	do	155	300
Restless	do	Grimsby	125	350
Resolute	do	do	125	350
Rex	do	do	125	350
Regina	do	do	125	350
John Bull	do	do	140	300
Britannia	do	do	140	300
Kymric	do	do	125	300
Lyric	do	do	125	300
Josephine	do	do	155	300
No. 361	do	Boston	155	400
No. 362	do	do	155	400
Total			11,789	21,210
Cook, Welton & Gemmell, Hull:				
Eudocia	Iron, steam	Hull	147	50
Prince of Wales	do	do	158	50
Sparta	do	do	146	50
City of Wakefield	do	do	142	48
Boarhound	do	do	152	45
Wolfhound	do	do	151	45
Buckhound	do	do	151	45
Bassethound	do	do	150	45
North Sea	do	do	145	45
Cambria	do	Grimsby	146	50
Gazehound	do	Hull	137	35
Desideratum	do	do	149	45
Setter	do	do	149	45
Mastiff	do	do	149	45
Terrier	do	do	148	45
Heron	do	do	145	45
City of Birmingham	do	do	142	45
Fedela	do	do	146	50
Retriever	do	do	147	45
Merrie Islington	do	do	147	45
No. 84	do	do	146	45
President Ludwig	do	Antwerp	169	90
Total, with fractions			3,273	
Smith & Stephenson, Grimsby:				
Mermaid	Wood, sail	Grimsby	62	
Ethel	do	do	51	
Prolific	do	do	62	
Kerry	do	do	50	
Total, with fractions			226	
Cochrane, Cooper & Schofield, Beverley:				
Amazon	Iron, steam	Hull	157	320
Golden Hope	do	do	157	320
Madras	do	do	166	320
Ostrich	do	Grimsby	145	270
Clyde	do	do	145	270
Victoria	do	do	159	270
Orinoco	do	Hull	153	320
Onyx	do	do	156	270

Table showing the vessels launched on the Humber in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Cochrane, Cooper & Schofield, Beverley—Continued.			*Tons.*	
Kittiwake	Iron, steam	Hull	153	270
Cormorant	do	do	153	320
Opal	do	do	156	270
Ceylon	do	Grimsby	145	270
Eagle	do	do	145	270
Seestern	do	Geestemunde	129	270
Polyp	do	do	129	270
Fittonia	do	Grimsby	145	270
Gardenia	do	do	145	270
Ampere	do	Hull	153	270
Marrs	do	do	153	270
Jasper	do	do	155	270
Agate	do	do	155	270
Europe	do	Grimsby	155	270
Asia	do	do	155	270
Blue Jacket	do	Hull	153	270
Africa	do	Grimsby	165	320
Total			3,782	6,910

WHITBY.

T. Turnbull & Son launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Ravenswood	Steel, steam	Whitby	2,390	218
Kendal	do	do	2,391	218
Total			4,781	

YARMOUTH.

H. Fellows & Son, Yarmouth, launched the *Alice Fisher* (wood, sail) of 80 tons, the port of registry being London.

RYE.

G. & T. Smith launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.
			Tons.
Diana	Wood, sail	Rye	144
Ivanhoe	do	Grimsby	60
Irene Hope	do	Lowestoft	53
Total, with fractions			258

THE THAMES.

Table showing the vessels launched on the Thames in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Samuda Brothers (limited), London:			*Tons.*	
Sappho	Steel, steam	British	1,935	9,000
Scylla	do	Admiralty	1,935	9,000
Bismarck	do	London	80	140
Empress Frederick	do	do	80	140
The Mermaid	do	do	200	330
Myleta	do	do	198	320
Edward William	do	do	195	320
Venator	Steel, dredger		20	
Regent	Steel, steam	London	45	240
Barge	Steel		42	
Total			*4,730	18,490
R. & G. Green, Blackwall, London:				
Princess Alice (yacht)	Wood auxiliary and steel, steam.	London	385	390
Dredger barge	Iron			
Duchess of Devonshire	Steel, steam	Exmouth		400
6 steel barges	Steel		100	
Tenerife (tug)	Iron, steam	London	52½	180
Total			537½	970

*Also three iron hopper barges and a steel screw dredger shipped abroad.

FALMOUTH.

The following vessels were launched at Falmouth in 1891:

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
W. H. Lean:			*Tons.*	
Mary Barrow	Wood, sail	Barrow	162	
Cox & Co.:				
General Skinner	Steel, steam		60	320
Ivy (yacht)	Wood, sail		25	
Total			85	320

NEWPORT.

Morday, Carney & Co. launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Pride of the Usk	Iron, steam	Newport, Monmouth	90	300
Belle of the Usk	do	do	63	180
Total			153	480

Both of these were built for towing purposes.

SOUTHAMPTON.

The Southampton Naval Works launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Faunus	Steel, steam	Goteborg	832	450
Rosendael	do	London	448	400
Cassel	do	do	448	400
Fjeld	Steel, sail	Tonsberg	2,129	.....
Albis	Steel, steam	Hamburg	650	600
Iatoba	do	Rio de Janeiro	634	330
Apore	do	do	634	330
Dalgonar	Steel, sail	Liverpool	2,600	.....
Celestina	Composite, steam	Rio de Janeiro	25	80
Prince of Wales	Steel, steam	Southampton	280	770
Crocodile	do	Beira	100	80
Windsor Castle	do	Poole	849	2,400
Total			9,237	.....

PLYMOUTH.

The following vessels were launched at Plymouth in 1891:

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Willoughby Brothers (limited):			*Tons.*	
J. Seed	Steel, steam	Liverpool	42	150
Conqueror	do	London	42	150
Saltash Floating bridge	do	Plymouth	42	72
Agnes Seed	do	Liverpool	78	250
Total			204	622
Welch, Bradshaw & Co.:				
Steam launch	Steel, steam	Rio de Janeiro	.....	15
Pioneer	Wood, steam	Plymouth	.....	30
Newcastle	do	Newcastle-on-Tyne	.....	40

GLOUCESTER.

W. H. Halford launched the *Little Sabrina* (wood, steam) of 20 tons and 8-horse power, the port of registry being Gloucester.

MILFORD HAVEN.

T. R. Oswald & Co. (limited) launched the following vessels in 1891:

Name of vessel.	Description.	Port of entry.	Gross register.
			Tons.
Ditton	Steel, sail	Liverpool	2,902
Windermere	do	London	3,050
Total			5,952

SUDBROOK.

T. A. Walker's executors launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Anita	Steel, steam	London	334	50
Christina	do.	do.	336	48
Lucia	do.	do.	323	48
Beta	Iron, steam	do.	393	96
Augra dos Reis	Steel, steam	do.	345	50
Sudbrook	Iron, sail	do.	326	.....
Thistle	Iron, steam	Cardiff	76	60
Total			2,133	292

AMLWCH.

W. Thomas & Sons launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Cygnus	Iron, steam	Liverpool	355	380
Detlef Wagner	Iron, sail	Nykjobing	255	.....
Total			590	380

WORKINGTON.

R. Williamson & Son launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Pendragon Castle	Steel, sail	Liverpool	2,510	.....
Pontigern	do.	London	2,529	.....
Black Rock	Steel, steam	Liverpool	362	60
Total			5,401	60

MARYPORT.

R. Ritson & Co. launched the following vessels in 1891:

Name of vessel.	Description.	Gross register.
		Tons.
Criffel	Steel, sail	1,250
Auchencairn	do.	2,040
Total		3,290

BARROW-IN-FURNESS.

At Barrow-in-Furness more varied work has been done in 1891 than in 1890, and the total tonnage launched is larger. In 1890 our records gave 24,665 tons; this year the total is 31,444.

The Naval Construction and Armaments Company (limited) launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Empress of China	Steel, steam	Foreign	5,905	10,250
Sir Charles Hartley	do	do	305	400
Bonny	do	British	2,702	1,700
Loanda	do	do	2,702	1,700
Kwarra	do	do	812	650
West Indian	do	do	2,704	1,975
Indianapolis	do	do	2,464	.....
Pontoon	do	Foreign	61	.....
Do	do	do	61	.....
Volta	do	British	2,702	1,700
Mexican	do	do	3,488	2,800
Cuban	do	do	3,488	2,800
Malacca	do	do	4,050	3,000
Total			31,444	26,975

PRESTON.

W. Allsup & Sons (limited) launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Tyne	Steel, steam	Preston	65	30
Humber	do	do	65	30
Mersey	do	do	65	30
Avon	do	do	65	30
Trent	do	do	65	30
Weaver	do	do	65	30
Ribble	do	do	65	30
Dee	do	do	65	30
Gertie	do	do	262	330
Santa Marinha	do	do	88	300
George	do	do	140	150
138	Steel, lighter	do	40	.....
139	do	do	40	.....
Total			1,090	1,020

THE MERSEY.

The following vessels were launched on the Mersey in 1891:

Builder and name of vessel.	Description	Port of registry.	Gross register.	Indicated horse power.
R. & J. Evans & Co., Brunswick Dock, Liverpool:			*Tons.*	
Cordova	Iron, sail	Liverpool	1,147	
T. Royden & Sons, Liverpool:				
Sedgemore	Steel, steam	do	4,332	600
Lathan	Steel, sail	do	3,081	
Alcedo	do	do	2,470	
Total			9,883	
W. H. Potter & Sons:				
Forteviot	Steel, sail	Liverpool	3,080	
Wanderer	do	do	2,903	
Total			5,983	
Laird Brothers, Birkenhead:				
Independencia	Steel, steam	South America	2,000	3,000
Sir R. Grenville	Iron, steam	Plymouth	420	800
Ibex	Steel, steam	Milford	1,161	4,000
Duke of Clarence	do	Fleetwood	1,850	4,000
Oriente	do	Brazil	800	675
Total			6,231	12,475

Laird Brothers also built new triple engines of 4,000 indicated horse power for the London and Northwestern Railway Company's steamer *Lily* and new boilers and overhaul of hull and machinery of paddle steamer *Mary Beatrice* (Southeastern Railway Company).

THE CLYDE.

The detailed returns show that there are great changes in the output of the firms. The noted Fairfield Company launched vessels of 12,793 tons, against 33,705 tons last year; but this year's engineering work was exceptionally important. The output of Messrs. D. & W. Henderson is less also, as is that of Messrs. W. Denny & Bros., of Dumbarton; and other of the yards whose tonnage we give in detail below show like alterations.

Table showing the vessels launched on the Clyde in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Scott & Co., Greenock:			*Tons.*	
Sheikh Birkhud	Steel, steam		327	550
Ross-shire	Steel, sail		2,256	
Tatung	Steel, steam		2,547	1,500
Kweilin	do		1,764	1,300
Paoting	do		1,764	1,300
Foross	do		1,086	2,000
Tramandahy	do		909	700
Coritiba	do		913	700
Poyang	do		2,547	1,500
Shasi	do		955	600
Ondina	do		913	700
Guanabara	do		913	700
Itaqui	do		753	700

Table showing the vessels launched on the Clyde in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Scott & Co., Greenock—Continued.			*Tons.*	
Industrial	Steel, steam		320	250
Itapoan	....do		753	700
Gosford	Steel, sail		2,230	.....
Triple expansion engines for H. M. S. Hercules.	Single-screw ironclad.		.....	8,500
Total, with fractions			20,959	21,700
William Denny & Bros., Leven Shipyard, Dumbarton:				
Avoca	Steel, steam		5,324	.....
Ovalau	....do		1,229	.....
Woolwich Belle	....do		298	.....
Pioneer	....do		156	.....
Guide	....do		156	.....
Ruahine	....do		6,150	.....
Electric			8	.....
Shipped in pieces:				
7 flats			3,744	.....
3 paddle steamers			740	.....
1 twin screw			161	.....
1 screw tug			70	.....
Total			18,036	13,120
A. Stephen & Sons, Govan, Glasgow:				
State of California	Steel, steam	Glasgow	4,456	4,400
Acanthus	....do	....do	3,021	1,600
Clan Mackinnon	....do	....do	2,268	2,000
Clan Macnab	....do	....do	2,268	2,000
Clan Macalister	....do	....do	2,268	2,000
Urania	Steel, sail	Arendal	1,689	.....
Afon Alaw	....do	Liverpool	2,052	.....
Total			18,022	.....
Barclay, Curle & Co., Glasgow:				
Talus	Steel, sail	Greenock	2,089	.....
Mount Stewart	....do	Aberdeen	1,903	.....
Cromdale	....do	....do	1,903	.....
Louisianian	Steel, steam	Liverpool	3,643	352
Nicaraguan	....do	....do	3,643	352
Brenda	Steel, sail	Greenock	2,100	.....
Springburn	....do	....do	2,650	.....
Total			17,931	.....
D. & W. Henderson & Co., Meadowside, Glasgow:				
Lightning	Iron, steam	Calcutta	3,306	3,000
Bohemia	Steel, steam	Glasgow	3,189	2,000
Lord of the Isles	....do	....do	466	2,500
Numidian	....do	....do	4,907	3,500
Algeria	....do	....do	4,510	3,000
Bolivia	New engines and boilers.		.....	3,000
Furnesia	New boilers and engines converted to triple expansion.		.....	4,500
Total			16,378	21,500

Table showing the vessels launched on the Clyde in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Fairfield Shipbuilding and Engineering Company (limited), Govan, Glasgow:				
H. M. S. Hawke	Steel, steam			13,500
Weimar	do		5,256	3,500
Tynwald	do		1,546	5,100
Loo Sok	do		1,804	1,700
St. Tudno	do		1,380	5,100
Pass of Melfort	Steel, sail		2,807	
Hawarden Castle	Steel, steam			6,000
Norham Castle	do			6,000
Warwick Castle	do			2,500
Conway Castle	do			2,500
Mastiff	do			
Normandy	do			
Total			12,793	45,900
A. & J. Inglis, Glasgow:				
Dunera	Steel, steam	Glasgow	5,440	5,000
Mira	do	Bergen	975	1,450
Oriental	Steel, yacht	Campbeltown	372	600
No. 217	Steel, steam	Glasgow	5,440	5,000
Irene	Composite, sail	Kiel	40	
Total			12,267	12,050
R. Duncan & Co. (limited), Port Glasgow:				
Robert Duncan	Steel, sail	Greenock	2,166	
Josephine Troop	do	Colonial	1,568	
Samaritan	do	do	2,142	
Wamphray	do	Glasgow	1,931	
Helen Brewer	do	Foreign	1,607	
Howard D. Troop	do	St. John	2,150	
Total, with fractions			11,565	
J. & G. Thomson (limited), Clydebank, Glasgow:				
H. M. S. Tribune	Steel, steam		3,500	9,000
San Salvador	do		2,020	2,400
Olinda	do		2,020	2,400
City of Paris	Set of engines			10,000
Total			7,540	23,800
Ailsa Shipbuilding Company, Troon, Glasgow:				
May	Steel, steam	Glasgow	656	1,000
Abbass	do	Troon	294	600
Sabarmati	do	Glasgow	1,015	1,200
Brahmani	do	do	1,015	1,200
Lady Hudson				
Kinahan	Steel, steam	Dublin	1,368	2,200
Esperanca	do	Rio de Janeiro	1,000	900
Total			5,348	7,100
Napier, Shanks & Bell, Glasgow:				
Glukai Marn	Steel, steam	Foreign	1,346	150
Lorna Doone	do	British	405	240
Laksluni	do	do	415	
Hsin Fung	do	Foreign	1,700	127
Total			3,866	

Table showing the vessels launched on the Clyde in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Simons & Co., Glasgow:			*Tons.*	
No. 287	Iron, steam		450	520
No. 288	do		372	380
No. 289	do		372	380
No. 290	do		372	380
No. 291	Steel, steam		325	800
No. 292	do		556	650
No. 293	Iron, steam		420	420
No. 295	Steel, steam		378	500
No. 296	Iron, steam		260	300
Total			*3,503	4,330
S. Knight & Co., Ayr:				
Premier	Steel, steam	Hálifax	374	500
Harold	do	Glasgow	682	700
Ravenswood	do	Bristol	391	1,400
Yoronha	do	Glasgow	176	450
Lady Rowena	do	do	362	1,100
Helga	do	Ayr	283	680
Carrick Castle	do	Belfast	223	300
Dinorwic	do	Carnarvon	290	440
Velinbeli	do	do	140	200
Total			2,921	5,770
David J. Dunlop & Co., Inch Works, Port Glasgow:				
Julia	Steel, steam		1,750	2,700
Mira	do		329	910
Chrysalis	do		201	400
Saõ Lazaro	do		40	175
Barge			35	
Do			35	
Do			50	
Do			50	
Do			80	
Do			80	
Total			2,650	4,185
Murdoch & Murray, Port Glasgow:				
5 barges for shipment	Steel, sail	Foreign	400	
Rio de Janeiro	Steel, steam	do	351	440
Recife	do	do	351	440
Cadette	do	do	27	60
Republic	do	London	21	60
Mabel	do	do	21	60
Effie Gray	Iron, steam	Glasgow	369	360
Halvar	Steel, sail	Foreign	910	
Total			2,450	1,420
J. Fullerton & Co., Paisley:				
Red Rose	Iron and steel, steam	Liverpool	423	500
Scott Harley	Steel, steam	Cork	403	500
Speedwell	do	Ipswich	135	150
Elcano	do	Glasgow	39	120
Carlingford Lough	do	Newry	218	260
Sarah Blanche	Iron, steam	Douglas	254	275
The Earl	do	Glasgow	400	480
Crofthead	do	Whitehaven	379	480
Bute	Steel, steam	Glasgow	180	225
Total, with fractions			2,434	2,990

* Besides a large quantity of boilers and machinery was made by this firm and shipped abroad.

Table showing the vessels launched on the Clyde in 1891—Continued.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Scott & Co., Bowling, Glasgow:			*Tons.*	
Marie	Iron and steel, steam.	Glasgow	191	335
Asteria	do	do	493	570
Notre Dame d'Afrique	Steel, steam.	Algiers	242	202
Breadalbane	do.	Granton	112	220
Athole	do.	do.	119	220
Topaz	Iron and steel, steam.	Glasgow	502	570
Onyx	do.	do.	369	455
Alcedo	do.	do.	180	160
Total			2,201	
Campbeltown Shipbuilding Company, Campbeltown:				
Brio	Steel, steam	Unknown	1,107	754
D. M. Cumming, Parkhead, Glasgow:				
No. 1	do.	Glasgow	14	40
No. 2	do.	do.	14	40
Mooring and lifting lighter	Iron and steel, steam.		100	100
Lighter	Steel		27	
Total			155	180

We have given above detailed returns of many of the chief shipbuilding yards on the Clyde, and we now give the total of that river, or rather of the Clyde district, for the Clyde includes in its returns yards as far from it as Ayr. From 1886, when the output of the Clyde district was 172,440 tons, it rose year by year to 349,000 tons last year; but for 1891 it has fallen sharply off, the claim of the Clyde being that its output this year is about 325,477 tons, so that there is a declension of some 24,000 tons. As the output is contributed to by at least forty builders, it is apparent that the average output—some 8,137 tons per yard—is very limited to that of some of our local yards, though it includes one building firm producing some 56,667 tons and falling to others who turn out less than 149 tons.

Table showing Clyde launches in 1889, 1890, and 1891.

Builders.	1891.	1890.	1889.
	Tons.	*Tons.*	*Tons.*
Russell & Co., Greenock	56,667	70,370	46,500
C. Connell & Co., Scotstoun	21,170	18,012	15,020
Scott & Co., Greenock	20,959	15,882	20,630
W. Denny & Bros., Dumbarton	18,036	28,509	25,230
A. Stephen & Son, Linthouse	18,022	16,841	18,430
Barclay, Curle & Co. (limited), Stobcross	17,932	19,495	12,760
London and Glasgow Company, Govan	17,000	3,600	8,666
D. & W. Henderson, Meadowside	16,378	21,195	14,806
Fairfield Shipbuilding Company	12,793	33,705	23,830
A. & J. Inglis, Pointhouse	12,267	11,554	8,304
R. Napier & Sons, Govan	11,763	5,630	11,640
A. McMillan & Son (limited), Dumbarton	11,594	5,280	10,344
R. Duncan & Co., Port Glasgow	11,565	10,742	11,257
W. Hamilton & Co., Port Glasgow	10,186	5,853	5,312
J. & G. Thomson (limited), Clydebank	7,540	14,800	12,316
Caird & Co., (limited), Greenock	7,286	16,318	16,461
Lobnitz & Co., Renfrew	7,602	3,553	6,507
Mackie & Thomson, Govan	5,576	7,802	1,215
Ailsa Company, Troon	5,348	6,044	3,771

Table showing Clyde launches in 1889, 1890, and 1891—Continued.

Builders.	1891.	1890.	1889.
	Tons.	*Tons.*	*Tons.*
Fleming & Ferguson, Paisley	3,970	5,150	3,620
Napier, Shanks & Bell, Yoker	3,866	5,616	5,165
Simons & Co., Renfrew	3,505	4,310	3,375
Blackwood & Gordon, Port Glasgow	3,058	4,289	800
McKnight & Co., Ayr	2,921	2,510	4,558
D. J. Dunlop & Co., Port Glasgow	2,650	2,305	6,750
Murdoch & Murray, Port Glasgow	2,450	4,624	6,269
Fullerton & Co., Paisley	2,434	1,774	965
Scott & Co., Bowling	2,201	1,970	2,054
Ardrossan Company	2,074	.....	.....
Alley & McLellan, Polmadie	1,148	3,385	1,517
Campbeltown Company	1,107	2,951	4,434
J. McArthur & Co., Paisley	1,278	906	752
T. B. Seath & Co., Rutherglen	468	1,645	527
Abercorn Company, Paisley	478	782	86
J. White & Co., Plantation	430	550	.....
Ritchie, Graham & Milne, Craigton	293	.....	.....
Murray Brothers, Dumbarton	160	1,104	.....
D. M. Cumming, Parkhead	155	145	34
Fife & Son, Fairlie	149	172	91
Yacht and boat builders	200	.....	.....
Total	325,075	349,945	335,201

There were 336 vessels included in the total for 1891, so that the average tonnage of the vessels launched was about 960 tons. Out of the 336 vessels there were 213 steamers, the rest, of course, being sailing vessels.

GRANGEMOUTH.

At Grangemouth the output has been increased. Last year the Grangemouth Dockyard Company launched twenty vessels of 18,362 tons. This year, with five fewer vessels, the tonnage is 20,360 tons. The proportion of sailing vessels built at this port is large.

The Grangemouth Dockyard Company launched the following vessels in 1891:

Name of vessel.	Description.	Gross register.	Indicated horse power.
		Tons.	
Henry Dumois	Steel, steam	1,100	1,200
Norway	....do	1,060	1,050
Arthur Dumois	....do	1,100	1,200
Rivingen	....do	700	650
Meteoro	....do	1,200	1,200
Pehr Ugland	Steel, sail	1,300	.....
Lord Brassey	....do	2,750	.....
Gerd	....do	1,200	.....
Hjertnes	....do	1,200	.....
Lord Ripon	....do	2,750	.....
Norden	....do	1,200	.....
Pharos	....do	1,300	.....
Penedo	Steel, steam	1,200	1,050
Primus	Steel, sail	1,100	.....
Turist	....do	1,200	.....
Total	.....	20,360	.....

There are nine sailing vessels at present in course of construction, making a gross tonnage of 15,000 tons.

DUNDEE.

The following vessels were launched at Dundee in 1891:

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Gourlay Brothers & Co.:				
Ptarmigan	Iron, steam	London	780	
Massilia	Steel, steam	French	2,965	400
Richard King	do	Natal	327	200
Assistance	do	Liverpool	214	80
Mustang	do	London	387	60
Athenai	do	Greek	2,404	300
Sparti	do	do	2,404	300
Total			8,791	
Alexander Stephens & Sons:				
Galena	Iron and steel, sail	Dundee	2,294	
Annie Speer	do	Liverpool	1,540	
Kirkhill	do	do	1,540	
Total			5,374	

LEITH.

Ramage & Ferguson launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Ladye Mabel	Steel, steam	British	693	142
Trade Winds	Steel, sail	Liverpool	2,859	
Moscow	Steel, steam	Leith	1,622	154
Zaria	Composite, steam	St. Petersburg	1,092	165
Lady Ina	Steel, steam	Glasgow	457	83
Drumrock	Steel, sail	Liverpool	3,182	
Corunna	Steel, steam	Leith	1,291	109
Wilhelm Tell	Steel, sail	Liverpool	3,107	
Procyon	do	Dundee	2,080	
Total			16,293	653

ABERDEEN.

Hall, Russell & Co. launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Goval	Steel, steam	Aberdeen	464	460
Thermopylæ	do	do	3,715	3,010
North Breeze	do	do	124	300
Induna	do	do	708	740
Strathdon	do	do	158	370
Strathtay	do	do	158	370
Retriever	do	do	154	380
Total			5,481	5,630

SHIPBUILDING IN IRELAND.

Though the Irish shipbuilders are not numerous, their contribution to the total of the shipbuilding of the United Kingdom is large, and the sister island has the great credit this year of launching through Messrs. Harland & Wolff the largest tonnage put into the water by any one firm.

Belfast.—The firm of Harland & Wolff (limited), Belfast, has built no less than 64,962 tons, or 16,000 tons more than in the year 1890. The chief features of this magnificent assemblage is the large tonnage of all the vessels save one. The average is close upon 5,000 tons.

Table showing vessels launched at Belfast in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Harland & Wolff (limited):			*Tons.*	
Nomadic	Steel, steam	Liverpool	5,749	3,200
Tauric	do	do	5,728	3,200
Magnetic	do	do	619	1,100
Labrador	do	do	4,737	3,700
Assaye	do	London	4,296	1,950
Cheshire	do	Liverpool	5,655	3,300
Shropshire	do	do	5,660	3,300
Ionia	do	do	5,330	2,200
Lancastrian	do	do	5,120	2,500
Philadelphian	do	do	5,120	2,500
Pindari	do	do	5,674	2,200
Mahratta	do	do	5,674	2,200
Massachusetts	do	London	5,600	3,300
Total			64,962	34,650
Workman, Clark & Co. (limited):				
Ramore Head	Steel, steam	Belfast	4,444	2,200
Marian Woodside	Steel, sail	do	1,549	.....
Wanderer	Steel, steam	Liverpool	4,086	2,300
Ardanmhor	do	Glasgow	2,081	1,350
Archdale	Steel, sail	Liverpool	1,557	.....
Rathdown	do	Dublin	2,145	.....
M. J. Hedley	Steel, steam	Belfast	442	540
Dundonald	Steel, sail	do	2,205	.....
Lough Heagh	do	do	973	.....
Invermore	do	do	1,600	.....
Galgorm Castle	do	do	1,690	.....
Howth	do	Dublin	2,240	.....
Total			24,922	.....
Macilwaine & Maccoll (limited):				
Manchester	Steel, steam	Belfast	506	750
Rostellan	do	Cork	60	60
Minnie Hinde	do	Belfast	409	550
Stream Fisher	do	Barrow-in-Furness	479	500
Pioneer	do	Cork	539	550
Arden*		Liverpool	550	500
Alene*		do	2,284	2,000
Total			4,827	.....

*Vessels remodeled and lengthened.

Londonderry and Carrickfergus.—At Londonderry Mr. Charles J. Bigger has launched 11,047 tons, as against 10,593 tons last year; and at Carrickfergus Messrs. Paul Rodgers & Co. launched 552 tons, as against 414 tons last year.

The following vessels were launched at Londonderry and Carrickfergus in 1891:

Builder and name of vessel.	Description.	Port of registry.	Gross register.
Charles J. Bigger, Londonderry:			*Tons.*
Silverstream	Steel, sail	Belfast	1,243
Craiglands	do	Liverpool	1,243
Ferndale	do	do	1,358
Beechdale	do	do	1,358
Parkdale	do	do	1,481
Mashona	do	do	2,500
John Cooke	do	Londonderry	1,864
Total			11,047
P. Rodgers & Co., Carrickfergus:			
South American	Steel, sail	Belfast	417
Pool Fisher	do	Barrow	135
Total			552

Thus Ireland contributes no less than 105,000 tons from five yards. That tonnage is comprised in forty-one steamers, so that the average size is remarkable. But it is a noticeable fact that only about sixteen of the number—less than half—are for Irish owners, Liverpool, London, Glasgow, and Barrow furnishing the rest of the orders.

CONTINENTAL SHIPBUILDING.

Though the number of shipbuilding reports given below is limited, it is, we believe, the largest that has yet been given in any British newspaper from continental shipbuilders. Each of those given is sent direct to the Newcastle Chronicle by the firm; and, when difficulties of distance and of time are considered, the list may be taken to be fairly illustrative at least of continental shipbuilding. In it we give the lists of German, Danish, Norwegian, Dutch, and Austrian shipbuilders, and these lists merit some slight comment. It will be observed that the material used is nearly always steel, but there are a few instances of the use of iron, and in two cases "composite" materials are reported. Most of the vessels are steamers, but a sailing vessel figures in one or two of the lists. The vessels are mostly small, though one of over 3,000 tons figures in a Norwegian list.

Denmark.—The vessels launched in Denmark in 1891 were as follows:

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Elsinore Shipbuilding Company, Elsinore:			*Tons.*	
Marxburg	Steel, steam	Bremen	1,776	1,000
Kronprinsesse Louise	do	Elsinore	430	500
Ljubord	do	Dundee	481	600
M. Davidsen	do	Hasle	288	350
Hijon	Steel, sail	Elsfleth	1,192	.....
Prins Valdemar	do	Fano	1,362	.....
Total			5,529	.....
Burmeister & Wain, Copenhagen:				
Grane	Steel, steam	Copenhagen	120	380
Nordsoen	do	Esbjerg	475	450
Enigheden	do	Marstal	672	580
Ask	do	Randers	945	600
Alexandra	Steel, sail	Copenhagen	675	.....
Total			2,887	1,950

Germany.—The following table shows the vessels launched in Germany in 1891.

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Flensburger Schiffsbau-Gesellschaft, Flensburg:				
Lowenburg	Steel, steam	Bremen	1,848	1,100
Artesia	do	Hamburg	2,813	1,600
Heinrich Schuldt	do	Flensburg	1,019	475
Holnis	do	do	1,016	475
Helios	Steel, sail	Hamburg	1,307	.....
Thor	Steel, steam	Sonderburg	213	250
Minna Schuldt	do	Flensburg	1,019	475
Thyra	do	do	1,019	475
Pronto	do	Blankenese	1,033	450
Teck	Iron, steam	Hamburg	550	360
No. 128	Steel, steam	Flensburg	1,060	450
No. 131	do	Hamburg	2,860	1,600
Total			15,759	7,710
Reiherstig Schiffswerfte, Hamburg:				
Kaiser	Steel, steam	Hamburg	2,900	1,800
Venetia	do	do	2,891	1,500
Tanis	do	do	3,600	1,500
Total			9,391	4,800
J. E. Techlenborg, Geestemunde:				
Nereide	Iron, steam	Geestemunde	135	250
Christine	Steel, sail	Bremen	2,026	.....
Helgoland	Steel, steam	do	286	450
Rigel	Steel, sail	do	2,000	.....
Lilly	Iron, steam	Hamburg	150	250
Nommandant	do	Geestemunde	135	260
Emmy	do	do	135	260
Placilla	Steel, sail	Hamburg	2,800	.....
Total			7,661	1,470

The Schiff- und Maschinenbau-Actien-Gesellschaft Germania, Kiel, has not launched anything this year, having had at the beginning of the year on hand only an armor-clad of 10,000 tons and a cruiser of 6,000 tons, which are to be launched early next year. There are now in hand besides those two vessels four torpedo boats of 88 tons, one torpedo chaser of 250 tons, and one dispatch vessel of 950 tons.

The Stettin Maschinen- und Schiffsbauwerft-Actien-Gesellschaft, Stettin, forwards us a list of the vessels launched in their year 1890–'91, from which it appears that twenty-three vessels of all descriptions were built, many of them of small tonnage and mostly for German owners. A steamer for Bremen of 1,850 tons was in course of construction. The actual tonnage in the last financial year is not given, but the horse power is considerable.

Holland.—The Netherlands Steamboat Company, Figenoord, Rotterdam, launched the following vessels in 1891:

Name of vessel.	Description.	Gross register.	Indicated horse power.
		Tons.	
Pelikaan	Composite, steam	350	400
Flamingo	do	350	400
Total		700	800

Norway.—The following table shows the vessels launched in Norway in 1891:

Builder and name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
Laxevaxgs Makin & Jernkibsbyggeri, Bergen:			*Tons.*	
Vöringen	Iron, steam	Bergen	430	80
Normand	Steel, steam	do	3,030	160
Teinstrand	do	do	35	10
Total			3,495	
Akers Mek Werkstad, Christiania:				
Snorri Sturluson	Steel, steam	Tsland	80	175
Kommandoren	do	Bergen	446	650
Herlang	do	Namsos	150	165
Gyller	do	Stavanger	520	380
Eidsfjord	do	Vesteraalen	105	320
Norte	do	Christiania	200	195
Total			1,501	
Trondhjems Meka., Verkstadt, Drontheim:				
Eira	Steel, steam	Molde		140
Kirk	do	Trhjem		80
Nauma	do	Namsos		225
Tryg	do	Bergen		70
Total			*500	

* Estimated; all small steamers.

Austria.—The Stabilimento Tecnico Triestino, Trieste, launched the following vessels in 1891:

Name of vessel.	Description.	Port of registry.	Gross register.	Indicated horse power.
			Tons.	
Energia	Steel, steam	Rostow	586	360
Sofia Poustowojtowa	do	do	395	250
Trud	do	do	539	360
Salamander	do	Pola, T. A. R. Navy	270	360
Ekaterina	do	Rostow	424	250
No. 16	do	Venice	32	60
To	do	Cospoli	30	125
San Rocco	do	Trieste	2,015	880
Total			4,341	2,645

Italy.—Messrs. Poli Brothers, of Chioggia, launched the *Savoia* (steel, sail) of 422 tons, the port of register being Venice. J. Mackenzie & Co., of Leith, launched the *Roman* (wood, sail) of 90 tons, Dundee being the port of registry.

RUSSIAN FARM PRODUCTS IN 1891.

REPORT BY CONSUL-GENERAL CRAWFORD, OF ST. PETERSBURG.

Having had frequent inquiries from the United States with reference to the crops of Russia of the present year as compared with those of the preceding years and with reference to the extent of the famine now prevailing in this Empire, I have taken great pains to secure reliable data on which to base a report to the Department on this important subject. The information which forms the foundation of this report has been received through the department of agriculture under the imperial ministry of domains from the correspondent farmers and the heads of the zemstvos, and may therefore be regarded as official and authentic.

The crops of the present year, including all cereals except maize, are considered below the average, and in the greater part of the black-land districts are unsatisfactory. In the general average the crops have not been as bad in European Russia for the past ten years, as may be seen by the table given further on.

WINTER WHEAT.

The growing of winter wheat was quite unsatisfactory over a large area. Owing to the extreme dry weather in the autumn of 1890 throughout the black-land districts of Russia, the fall sowings were not ready for winter. In many cases they had sparsely grown and were unthrifty, while in some instances the fields intended for winter crops were left quite unsown. In the winter the crops, particularly wheat, being scarcely covered with snow, suffered very much from the extensive cold and frost in the spring, while the hot and dry weather in the summer materially injured the crops in a large portion of the country. A comparatively good crop was obtained only in the black-land governments of the southwest of Russia and in the northern districts of Bessarabia. A medium crop was harvested in the governments of Kherson, Chernigov, the western districts of the government of Orel, and in some districts of the governments of Toola, Koorsk, Poltava, Kharkov, and Yekaterinoslav. In the east of Russia a fair winter crop was obtained in the western districts of the government of Oofa, in the northern parts of the governments of Samara and Saratov, and in some districts of the government of Simbeersk. The remaining black-land districts, as well as the government of Nizhnee-Novgorod and some districts of the governments of Viatka and Perm, produced poor crops. In the midland goverments, except the above mentioned, there was a fair crop, and in the manufacturing districts and in all of the northwestern governments, as well as in the government of Kostroma, the crops were very good There were average crops in the Baltic provinces and in the government of Moheelev.

The winter-wheat crop in general was better than the rye crop, owing to the fact that wheat is scarcely cultivated at all in the districts where the win-

ter crops were poor. The spring crops in general, the same as the winter crops, were below the average, and for a large area very unsatisfactory. The spring crops, which were looking very promising in the early part of the summer, suffered from the dry weather apparently more than the winter crops. As to the satisfactory or unsatisfactory harvest of the spring crop in general, the same districts may be mentioned as enumerated above. However, in the districts of poor winter crops, with the exception of the southern districts of the governments of Samara and Saratov, as well as the whole government of Orenboorg, the spring crops, particularly the buckwheat and millet, were better than the winter crops, whereas in the districts of good winter crops the spring crops were bad. The crop of maize was better than the average; barley was worse; and all the other cereal crops were unsatisfactory, particularly buckwheat. The districts which suffered most both in winter and spring crops may be divided into two parts. The first, beginning from the south of the government of Saratov, extends east to the southern border of the government of Samara, including the governments of Astrakhan and Orenboorg and the southeastern part of the government of Perm, together with the province of Ooralsk and some parts of the province of Akmollinsk and the government of Tobolsk. The other part, beginning from the eastern districts of the governments of Koorsk, Orel, and Toola, extends toward the east and the northeast, including the governments of Voronezh, Riazan, Tambov, Penza, and Kazan, and reaching the southern part of the government of Nizhnee-Novgorod, the northern part of the government of Simbeersk, and some districts of the government of Viatka.

CROP DEFICIENCY OF 1891.

The following table will show the deficiency in all the crops of cereals of 1891 as compared with the average crops for the five years from 1883 to 1887:

Cereals.	1883-'87.*	1891.	Increase or decrease.
	Bushels.	*Bushels.*	*Bushels.*
Winter wheat	72,702,000	60,585,000	— 12,117,000
Spring wheat	170,215,000	116,554,000	— 53,661,000
Rye	684,899,000	519,877,000	—165,022,000
Barley	151,174,000	134,441,000	— 16,733,000
Buckwheat	60,585,000	35,774,000	— 24,811,000
Millet	49,910,500	36,351,000	— 13,559,500
Peas	13,848,000	11,540,000	— 2,308,000
Maize	22,503,000	27,696,000	+ 5,193,000
Oats	549,881,000	422,941,000	—126,940,000

*Average.

Comparing the crop of cereals in 1891 with those of the last ten years, we find that the rye crop of this year is better than that of the years 1880, 1883, and 1889, and that the general crop can be compared with that of 1880 and of 1885. Taking into consideration the increase of the area of cultivation, the crop of this year may be regarded as being more than that of 1880.

CROP YIELD OF 1891.

The following table will show the total crops of the principal cereals for the last eleven years as compared with the crops of 1891:

Year.	Rye.	Wheat.	Oats.
	Bushels.	*Bushels.*	*Bushels.*
1880	504,656,000	158,946,000	490,652,000
1881	611,176,000	256,852,000	588,430,000
1882	606,772,000	232,341,000	540,147,000
1883	518,994,000	212,128,000	540,003,000
1884	664,958,000	258,560,000	485,355,000
1885	679,809,000	172,378,000	376,486,000
1886	639,743,000	157,700,000	551,500,000
1887	721,250,000	274,912,000	596,535,000
1888	734,995,000	304,018,000	544,487,000
1889	547,254,000	197,257,000	502,775,000
1890	652,390,000	206,330,000	523,997,000
1891	519,877,000	177,139,000	422,941,000

The crops of flax and flaxseed were rather poor in almost the whole black-land district, being good only in the southwestern governments, whereas the flax crop was bad in the southern, middle, and northern governments; and in the eastern and southeastern governments it was practically destroyed by the dry weather. In some of the western and Baltic districts, and particularly in the governments of Novgorod and of St. Petersburg, the flax crop was very good.

The same may be said of the hemp crop, which in general is considered to be less satisfactory this year, as the main districts producing hemp, *i. e.*, the middle, northern, and southeastern governments, yielded a poor crop.

Owing to the dry weather in the summer, the potato crop was unsatisfactory in most districts, excepting the governments of Kiev, Podolia, Volhynia, and partly Bessarabia, Chernigov, Tambov, Riazan, and Toola, in which the crop was about the average. A good potato crop was obtained in the northwestern governments.

The sunflower crop was middling in the governments of Poltava, Kharkov, Tambov, and in part of Saratov, but in the other governments, and particularly in the main districts of its cultivation, the crop was unsatisfactory, in some places the plant being destroyed by the frost, or, escaping that, by the dry weather in the summer.

The winter rape seed, being damaged in the winter, yielded a poor crop. The summer rape seed, however, produced an average crop.

The tobacco crop was also unsatisfactory over almost the whole tobacco district.

In general the beet-root crop was less than in 1890.

Almost over all Russia, excepting the eastern and southeastern districts and some odd districts along the Volga, the fruit crop was very plentiful, particularly apples, although the quality was inferior to that of former years. The fruit was often small and lacking in flavor, and in many instances spotty and worm-eaten.

Owing to the cold and frosty weather, the berry crop proved to be below the average.

Vegetables in general, being affected by the cold in the spring and by insects in the summer, were not good, although in the Baltic provinces there was an average crop. The crop of melons was unusually plentiful.

The hay crop was comparatively good, although it proved to be less than the average for the last five years.

CROP YIELD BY GOVERNMENTS.

Bessarabia.—The crop of winter cereals in this district may be considered as fair, excepting that of winter rape, which was bad, only in some places yielding about 500 pounds of seed per acre. The crop of spring cereals was good, with the exception of the southern districts. Particularly maize grew in abundance. The flax and hemp crops were, in general, as good as was the potato crop, barring a few exceptions. The fruit crop in general was very good, and grapes in particular gave an excellent quality, owing to the exceedingly hot weather in the summer, whereas melons were injured by the heat in some degree. Hay was abundant, particularly in the lowlands.

Kherson.—The crops in this district suffered greatly both from the heat and from the heavy hail falling on several occasions during the season. The winter crops were poor, and of the spring cereals only wheat and oats produced an average crop. Among the oilseeds the sunflower, flax, and linseed crops were particularly bad. In some places only 400 pounds of flaxseed per acre were gathered. In this whole district only an average crop of fruit was obtained; the fruit trees were damaged by the hail and heavy storms. Vegetables yielded a good crop in some, and poor in other, districts. The hay crop was poor in the whole government.

Taurida.—Both the winter and the spring cereals suffered much from the heat and somewhat from the hail, yielding in some places a poor, and in some an average, crop. The flaxseed crop and that of hay were poor. Fruit, which looked very promising in the spring, gave only an average crop, owing to the dry weather. Vegetables were good in one place and poor in another, owing to the heat.

Yekaterinoslav.—The winter crop, owing to the extreme heat, yielded only an average crop, rye being better than wheat; whereas the crop of most spring cereals proved to be good, and in some places even very good. Sunflower and linseed produced a good crop, but flax was poor. Owing to the frost in the spring and insects in the summer, there was a scarcity in fruit, except pears, which grew in abundance. The general crop of vegetables was poor, except the melons, and they were plentiful. Grass grew only on lowlands, and therefore very little hay was obtained.

The Don.—Here, as in most of the southern governments, the hot weather and the scarcity of rain injured all cereals and vegetables; therefore, both the winter and the spring crops were poor in the northern districts of this

government, and scarcely an average crop was obtained in the southern districts. This applies to all, the sunflower, for instance, yielding only about 300 pounds of seed to the acre.

Kiev.—Of the winter cereals the rye crop was satisfactory, but wheat, owing to the dry spring, was poor. Among the spring cereals wheat, oats, and barley were above the average, and millet and peas were very good. A fair crop of flax and hemp was obtained in this government, the latter being very good in some districts. The winter rape, having suffered from the insects in the autumn and from the cold in the winter, was practically destroyed in the spring. The beet root, on the other hand, yielded a good crop. Fruit, especially apples and pears, grew in abundance, as well as cucumbers and melons, but their quality was inferior to that of former years. An average hay crop was obtained.

Podolia.—The weather was not uniform in this government. The southern districts experienced a very dry summer, whereas in the northern districts heavy rains in the early part of the summer damaged the wheat in bloom; therefore, the general crop was scarcely satisfactory. Oats and millet, however, were fair. An average crop of flax and hemp was obtained, and also an abundant crop of all fruit, except plums. The hay crop was about the average.

Volhynia.—An average crop of winter cereals was obtained in some parts of this government, even better than last year. The best crop of spring cereals was oats; wheat, millet, and barley yielded only a fair, and buckwheat a poor, crop. Flax and hemp gave an average crop, and the potatoes were greatly injured by the rains in the early part of the summer. An average fruit crop was obtained, plums and cherries being damaged greatly by the cold and hail. Nearly an average hay crop was grown, but the rainy weather greatly interfered with the work of harvesting it. The rains greatly damaged the vegetable crop in general and had to be resown in some districts.

Poltava.—The weather for the greater part of the season was very unfavorable for the development of farm products. The heat, touching sometimes 122° F., and the absence of rain caused great damage to all cereals, particularly to the millet. The little rain which fell in July was accompanied by hail and heavy storms, damaging everything. The winter crops, and particularly the rye crop, were very bad in the southern, and only a trifle better in the northern, districts. Of the spring cereals a satisfactory wheat crop was obtained, and an average crop of oats and barley. Buckwheat was very bad and in some places greatly damaged. The greater part of the flax and hemp districts produced an average crop, although the seed crop was not very good. The sunflower crop was pretty good, yielding from 600 to 1,200 pounds of seed to the acre. In spite of the storms, apples and pears gave a fairly good crop. The low, swampy lands yielded an average crop of hay, the grass on the higher lands being so poor that the fields were pastured.

Voronezh.—The heat and drought in this government were more extreme than were ever experienced before. The fields in some districts were black, as if burned, and both people and cattle suffered from want of water, as there was scarcely any rain during June, July, and August; in consequence, all the vegetation suffered greatly and the winter cereals were largely ruined. The spring crops also suffered very much from the heat and were so short and poor that in a few districts they were not harvested. The people in this government have not seen such bad crops for many years. Flax and hemp gave a very bad crop, and rape was nearly ruined. The sunflower, although below the average, yielded a better crop than any other oilseed plant. Potatoes grew very scantily, and in some districts the plant did not blossom. There was no fruit gathered, except a few apples. Also a very poor hay crop was harvested, as the grass was burned on the higher lands. It is reported that grass was harvested only from one-tenth of the meadows.

Kharkov.—The meteorological conditions, although better than in the adjacent government, were very unfavorable to vegetation. Barley, millet, and buckwheat suffered greatly from the dry weather, which prevailed until late in the summer. The winter crops were so damaged that these fields were plowed up and sown to spring grain, which produced comparatively good crops. Among the other plants suffering from the drought, flax and hemp yielded a poor crop, as well as potatoes, whereas the beet root, in spite of the unfavorable weather, was excellent, yielding about 20,000 pounds per acre. Of the fruit crops apples and pears grew in great abundance. A very good quality of hay was obtained, although not very plentiful.

Koorsk.—Although the weather was hot and dry, an average crop of winter cereals was secured in the greater part of this government. Among the spring cereals, wheat and oats, and especially buckwheat and peas, were not good, as also flax, hemp, sunflowers, and potatoes. The fruit crop in general was unsatisfactory, excepting apples, which grew plentifully, but were small and worm-eaten. The grass was greatly damaged by the heat, and only an average hay crop was secured.

Chernigov.—Besides the drought the hail greatly injured the spring cereals, particularly oats. The rye crop was better, and it would have been good but for the storms raging in the spring. Bad barley and millet crops were obtained, and buckwheat was almost ruined by the hot weather. Flax and hemp yielded an average crop, whereas potatoes were very poor. A good crop of apples and pears was secured, although apples were not of average quality. Hay thrived on the low, swampy lands, but was burned on the high lands, and the crop generally was not satisfactory.

Orel.—The warm and dry summer greatly damaged both winter and spring cereals. The eastern districts of this government produced very bad wheat and rye crops, an ordinary crop of winter cereals being obtained in the western districts. Buckwheat gave a poor crop in the greater part of the government. Owing to the same cause, a poor crop of flax and hemp was garnered. Vegetable and fruit crops were unsatisfactory, excepting apples,

which were harvested in great abundance. The lowlands produced an average crop of hay, comparatively little being gathered from the elevated lands.

Tambov.—All cereals suffered greatly from the drought and a ver unfavorable meteorological condition in this government. No rain falling during the whole summer, all farm products were greatly damaged. On the lowlands some flax and hemp was harvested, the other oilseeds being destroyed almost entirely, except the sunflower, which yielded a fair crop, owing to the late rains. The vegetable and fruit crops were also very poor, potatoes, however, giving an average crop. The grass was greatly damaged by the excessive heat, and consequently the hay crop was poor except on low-lying meadows.

Toola.—The intense heat and the scarcity of rain greatly injured both the winter and the spring sowings. The winter crops in general were very poor; in some districts they were entirely destroyed. Of the spring cereals oats and millet gave fair crops. In the great part of the government flax and hemp were bad, but an average crop of potatoes and sunflowers was harvested. Fruits grew plentifully, but very little hay was gathered.

Riazan.—An almost complete destruction of cereals was experienced in this district. The heat was so intense that the wells and streams in some districts were dried up, and the trees lost their leaves in July. Except in the very northern districts, where the crops were far from satisfactory, nothing or very little of rye or winter wheat was harvested. The spring sowings, however, turned out better, although buckwheat was ruined. Flax and hemp in most districts yielded a poor crop, but potatoes, owing to the rain falling in August, were fairly good. Fruit of all kinds grew in great abundance.

Penza.—Owing to the same cause, the crops both of winter and spring cereals were unsatisfactory, and in some districts very bad. Particularly poor were the crops of flax and hemp in the whole government, and only an average crop of potatoes was secured. Very little hay and less fruit were gathered.

Kasan.—A very bad crop both of winter and spring sowings was harvested in this government, rye doing little more than returning the seed sown in the autumn. The spring crops were also much damaged by the drought; oats, for instance, were so short and thin that the farmers pulled them at harvest time, as they could not be cut. Only very wet soil located near the woods produced a fair crop. The heat greatly injured both flax and hemp, nearly destroying them in most of the districts. Also a very poor crop of potatoes and fruit was obtained. Very little hay was harvested from the high-lying meadows, as the intense heat had damaged almost entirely the grass in the spring.

Simbeersk.—Owing to the drought and the tremendous heat, registering sometimes as high as 133° F., a generally poor crop was experienced in this government. Rye, excepting in a few districts, yielded a very bad crop, being, in fact, one of the poorest rye crops known to this government for many years. The spring sowing suffered greatly from the very unfavorable

meteorological conditions of the season. Oats, wheat, peas, and buckwheat were greatly injured. Flax and hemp sowings, owing to drought, having sprouted only in August, yielded poor crops, and in some districts also the sunflower. In some places the potato crop proved to be satisfactory, but the fruit was very bad, being injured by the insects. Some hay was harvested, but only from the sheltered lands, the grass being burned on the open meadows by the sun.

Saratov.—The growth of all kinds of vegetation was greatly checked in this government by hot winds that caused the thermometer to register 154° F. in the sun. The winter cereals yielded a very bad crop, and in some instances it was so poor that it was pastured. Of the spring cereals oats and wheat gave a somewhat better crop, all the others being failures. Of the oilseeds the sunflower crop was comparatively good, flax, hemp, and rape being nearly ruined. Potatoes were very small and not abundant. Fruit was damaged both by heat and insects in the spring. In many districts the meadows were unproductive, because of great heat.

Samara.—A very poor crop of all cereals was harvested in this government, the meteorological conditions being very unfavorable. Rain fell very rarely, touching only a few districts. Winter wheat, rye, spring wheat, and oats were greatly injured, but peas and buckwheat did better. Flax and hemp gave unsatisfactory crops, and in some places the sunflower was poor. In some districts the meadows were pastured, and consequently very little hay was obtained.

Oofa.—In this government cereals in general were below the average; the spring cereals particularly gave very poor crop. In some districts, however, the spring wheat yielded nearly an average crop. Rye in some places proved to be middling and in one or two districts very good. The flax and hemp crop was a failure, the former being damaged partly by the frost in the spring. Very little hay was gathered, and the fruit and vegetable crops in general were far below the average.

Orenboorg.—Although some rain fell in this government in July, it produced little good, the cereals having suffered greatly from the heat, which had prevailed since the beginning of May. The winter cereals, and particularly rye, were damaged. Of the spring cereals wheat, barley, and oats were unsatisfactory, the millet in some districts producing a better crop. A very poor crop of flax and hemp was obtained, as well as of potatoes; however, these gave an average crop in some districts. In the spring the grass looked well; but, owing to the want of rain, only a small crop of hay was harvested.

Astrakhan.—Crops in general proved to be very unsatisfactory in the whole government. Both winter and spring cereals were damaged. Fruit was also a failure here. An average, and in some districts even a good, hay crop was harvested, owing to the rain which fell in March and April.

Moscow.—The meteorological conditions in this government were more favorable. Although the hot weather in June and July partly injured the spring sowings, the rain falling in the spring and in the latter end of July

had a very beneficial effect on the crops in general. An average, and in some districts a very good, rye crop was produced, although the seed was of an inferior quality in some cases, owing to the heat in June. Of the spring cereals the oat crop proved to be very satisfactory. The barley and pea crops were not uniform, being very good in one, and bad in another, place. An average spring-wheat crop was harvested. Flax and hemp yielded a good crop; in some districts it was rather short grown. Potatoes thrived well and produced an abundant crop. Fruit was damaged by the frost in the spring to a considerable extent throughout the several districts of this government. The meadows, being damaged by heat, produced a hay crop somewhat below the average.

Tver.—Both the winter and spring cereals would have given a very rich crop had it not been for the hailstorm, which did considerable damage in some districts. However, the general average was good in this government. Winter cereals gave a better crop than has been experienced for a long time. Of the spring cereals the oat and barley crops were better than the average. An average crop of flax and hemp was secured, and potatoes of good quality were harvested in great abundance. The hay crop was a trifle less than usual, and fruit was greatly damaged by the storms.

Vladimeer.—The general crop of winter cereals was fairly good in this government, but the spring cereals were hardly up to the average. Millet and buckwheat were good. Owing to the drought in June and July, the flax and hemp gave scarcely an average crop, but potatoes thrived well in most districts. The hay crop averaged a trifle low.

Yaroslav.—The weather in the earlier part of the summer, being very dry, damaged somewhat the late-sown spring cereals, but the rain which set in at the end of July caused a general improvement in the whole government. The winter fields did not suffer from the drought, and gave a good, and in some districts an excellent, crop. The early-sown spring cereals yielded also a good crop, except oats, which were somewhat injured by the heat. A good barley and wheat crop was secured in the greater part of this government. The flax thrived satisfactorily, the lowlands producing an especially good quality. A very good crop of potatoes was obtained, but fruit was under the average. The hay crop in many districts was below the average.

Kalooga.—Spring cereals were damaged by the drought in many districts of this government. Oats sown in the earlier part of the spring yielded an average crop. Flax and hemp thrived fairly well, thanks to the rainy weather in the autumn. Very little hay was gathered, and this only from the low-lying meadows.

Smolensk.—The weather, being very dry in the earlier part of the summer, somewhat damaged the crops. The heavy rain which set in at the end of July interfered also with harvesting. Rye gave only an average crop, whereas the wheat crop was very poor. The spring oat and barley crops were good in general, but peas and buckwheat were unsatisfactory. The

flax and hemp cultivating districts gave good crops, and potatoes were of excellent quality and abundant. Fruit thrived well, particularly apples. The hay crop was below the average, except in the lowlands.

Kovno.—The crop in general, and particularly the winter cereals, suffered considerably from the rain falling continually during the season. In consequence the winter cereals, as well as spring wheat and barley, produced only an average crop. A good flax and hemp crop was harvested, but potatoes were very scarce. Fruit grew in abundance, but of an inferior quality. Hay was plentifully harvested.

Vilna.—A very rainy season was experienced in this government. The rain, falling continually during the summer, caused the rivers to overflow many of the farms, thus damaging the crops. Of the winter cereals rye produced an average, and wheat a very good, crop. The spring sowings, except peas, gave average crops. Potatoes were gathered plentifully. A poor hay crop was harvested, owing to heavy rains.

Grodno.—The cold and rainy weather in the latter part of the summer greatly interfered with the harvest of cereals and of hay. Winter wheat and rye yielded an average, and in some districts an excellent, crop. An abundant crop of oats was also secured, barley and buckwheat being less satisfactory. Flax thrived well, but potatoes in most places were poor. Owing to the wet, the hay was somewhat damaged.

Vitebsk.—The favorable weather in the latter part of the summer greatly improved the condition of the crops, which were affected by the midsummer heat, thus giving a good general average. The winter rye and wheat crops were very satisfactory, and a good general crop of all spring cereals was secured. Flax and hemp also yielded good crops, both the fiber and the seed being of a superior quality. Potatoes thrived well, but were somewhat decayed. An average hay crop was obtained.

Minsk.—The exceedingly wet weather in the spring and in July greatly interfered both with the growth and with the harvesting of cereals in the eastern districts of this government, although winter cereals were harvested under more favorable conditions. Good rye and winter-wheat crops were harvested in the elevated fields especially. The spring cereals also gave a very good crop. Barley, buckwheat, and millet thrived the best of all. Flax and hemp crops were irregular, being good in one place and bad in another. The potatoes grew well, while only an average crop of hay was harvested.

Moheelev.—The crops in this government suffered from the rains in the latter part of the summer and from heavy hailstorms, in consequence of which the winter cereals were hardly up to the average. The spring sowings, however, did very well, and hay was good. Barley and peas gave particularly good crops. A satisfactory crop of flax and hemp was secured, the seed being especially good. Potatoes gave an average yield.

Poland.—The cold, wet, and windy weather prevailing in these governments in the earlier part of the summer was very unfavorable, particularly

to the winter cereals. The excessive moisture injured somewhat the crops, and the rye and wheat crops were only middling. Spring cereals thrived considerably better, yielding more than an average, and in some districts a very good, crop of wheat, oats, and barley. A fairly good crop of flax and of hemp was secured, although the seed was of an inferior quality. The rape, having suffered from the unfavorable weather, produced only an average crop. Potatoes and fruit were not very good. Hay was gathered in abundance, but clover somewhat suffered from the wet.

Nizhnee-Novgorod.—The general average of the crops in this government was low. Winter cereals suffered from the scarcity of snow and from the frost, as well as from the intense heat of the summer. Of the spring cereals only the millet produced a fair crop, all the others being more or less below the average. A rather poor supply of flax and hemp was obtained, whereas potatoes were plentiful. The meadows yielded poorly.

Kostroma.—The dry weather, although favoring the harvest of rye and hay, had an injurious effect on the spring sowings, which, in consequence, yielded only an average crop. The rye crop was exceptionally good. A good supply of flax, and especially of potatoes, was also obtained. Hay, being of a very good quality, was scarcely as plentiful as in the previous year.

Perm.—Rye produced only an average crop in this government, and wheat was not good. Owing to the drought on the one hand and the frost on the other, a very poor crop of spring sowings was harvested, especially of buckwheat, millet, and peas. Flax and hemp were not good. Potatoes were gathered in abundance. A bad hay crop was obtained in most of the districts, the elevated lands being affected by the heat and also by the grasshopper.

Viatka.—The general condition of the crops must be considered as being unsatisfactory. After very cold weather in the northern districts, a very hot season set in all over the government, accompanied by a frost in the middle of July. Owing to the unfavorable weather, winter cereals, and especially the spring sowings, suffered extensively. Rye, having suffered partly from the worm in the autumn and partly from the cold and heat in the summer, produced a bad crop. Rye growing on newly manured fields thrived better, yielding a satisfactory crop. Of the spring cereals barley and, in part, oats were comparatively good, particularly in the northern districts; the wheat crop being poor almost in the whole government. The crop of flax and hemp was below the average, the fiber of the former being very short grown. An abundant potato crop was secured, but fruit was scarce. The elevated meadows yielded a poor crop of hay.

St. Petersburg.—The warm and dry weather in the earlier part of the season was followed by cold and wet, which, although improving the spring crops, greatly interfered with the harvest of the winter cereals. The crop of rye, however, was very good. The spring cereals suffered somewhat later in the season, but oats, barley, and peas gave an average crop. Fruits, particularly apples, were gathered in abundance. On the average the crop

of hay was good, and grass cut before the middle of July was of a very superior quality. Flax and hemp proved to be good, and the potato crop was also above the average.

Pskov.—The rainy weather of July and August greatly improved the general crops, which were more or less affected by the heat of the early summer. The crop, both of the winter and spring cereals, was good, and in many places very good. Spring wheat, oats, and barley yielded an average crop. An average supply of flax and hemp was also secured, whereas potatoes were below the average. The hay crop was satisfactory.

Novgorod.—Vegetation was thriving well under the very favorable meteorological condition of the earlier part of the summer, and the general crop would have been very good had it not been for the rains, which retarded thriving of spring cereals and greatly interfered with the harvest. The rye crop was above the average, and in some districts excellent, and the spring cereals in general produced an average crop. Flax was gathered in abundance, the fiber being of good quality. The hemp was less satisfactory. A good supply of potatoes was also secured. The hay crop was about the average.

Baltic provinces.—The general crop in these provinces can be considered as very satisfactory. The weather, although somewhat dry, changed about the middle of July, improving the general condition of the crops. A very good supply of winter cereals was secured, the rye being especially good. Of the spring cereals oats and barley produced good crops. Wheat was less satisfactory. Flax and hemp thrived well and yielded good crops. Potatoes were gathered in abundance, but, owing to the continuous rain, were somewhat injured by rot. Grass grew well, but was damaged more or less by the rains at the harvest time. Fruits were gathered in abundance, but they were of an inferior quality.

Vologda, Olonets, and Archangel.—The weather being very favorable, cereals thrived well in these governments; however, the frost, passing here in August, injured some of the spring sowings a little. The rye crop was above the average, and in the southern districts even very good. Moderate crops of flax and hemp were obtained, the frost having damaged the latter a trifle in some districts. Potatoes were below the average, and only in the government of Vologda was a good crop secured. Owing to the cold and rainy weather preventing, the harvest of hay was comparatively light.

Caucasus.—Owing to very favorable weather, lasting here almost the whole season, the general crop proved to be above the average, and in many districts excellent. In the province of Terek, however, the winter cereals suffered a little from drought and somewhat from hail. Potatoes did well and were gathered in abundance. The flax crop was satisfactory, although a better crop was expected, and hay yielded an abundant crop and of good quality.

Tomsk.—Both winter and spring sowings were greatly favored by the fine weather, producing an abundant crop of rye and barley. The flax gave a good quality, and the hay crop was excellent.

Tobolsk.—Owing to the dry and stormy weather, the crops suffered more or less severely. An unsatisfactory crop both of spring and winter cereals was obtained. Flax was very short grown and of a poor quality. Potatoes yielded much better. The meadows, being damaged by the heat and by the grasshoppers, produced a poor crop of hay.

Yeniseisk.—A very good crop of winter, as well as of spring, cereals was harvested in the whole government, owing to favorable weather. Spring wheat and rye were good, whereas buckwheat, millet, and peas were below the average. A very good supply of hay was secured.

Irkootsk.—Although the weather was favorable, only an average crop of all cereals was harvested in this government. Potatoes and hay were harvested in abundance, whereas flax and all vegetables yielded a very poor crop.

Baikal.—The drought prevailing in this province in the latter part of the summer injured the crops a trifle; however, the crops in general were satisfactory, and in many districts very good. Hay was harvested in abundance, and it was of good quality.

Semipalatinsk.—The crops in this province were not very uniform. In some places the sowings suffered somewhat from drought and in others from excessive rains; however, the general crop is considered to be above the average. Oats suffered more than any other cereals, although the crop was good. An excellent hay crop was harvested.

Akmollinsk.—Excepting rye, which suffered from the drought, an average crop of all other cereals was secured. Vegetables grew well, and a satisfactory crop of hay was produced.

CONCLUSIONS.

From the foregoing brief description of the condition of the harvests in the fifty-nine several governments in European Russia, it will appear that the cause of the shortage was due to drought, accompanied by excessive heat, followed by severe hailstorms. It is therefore manifestly unjust to attribute the crop failures to the "unsuccessful methods of the Russian farmers."

By examining the tables given near the beginning of this report and by comparing the shortage therein enumerated with the average exports of preceding years, as detailed in my report on "Foreign Commerce of Russia in 1890," and published in CONSULAR REPORTS No. 130, July, 1891, it will be seen that the crops in Russia of the present year were ample to supply the needs of the people. In the report above mentioned, and which was based upon official statistics, the average annual export of cereals for 1889–'90 is given in round numbers as 8,000,000 tons, while the annual export of farm products other than cereals is therein calculated at about $150,000,000. Thus, by applying the annual exports of farm products from Russia to the shortage in 1891, the latter would have been easily covered.

A prevalent opinion here among those most familiar with this troublesome question is that, aside from the shortage in crops, there is another

prominent cause of the present distress in Russia. It should be remembered that a large part of the farming in Russia is carried on by rich landed proprietors, owning enormous tracts of land, each of which is tilled by peasants, who are hired for a mere pittance in comparison with the price of farm labor in the United States and are generally paid in such edibles as are in the least demand in the home or foreign markets. These landed proprietors often have their grain contracted for in advance in the foreign or home markets, generally quoting it in pounds sterling.

This year, owing to causes that need not be discussed in this report, the paper ruble, which is the only medium of exchange known in Russia, became greatly depreciated, so that the farmers were able to receive for their produce nearly 30 per cent more of rubles than they received in 1890, assuming the prices in the foreign markets to be the same in both years. This condition of things naturally tempted the farmers throughout the Empire to dispose of everything that could be turned into rubles, trusting to Providence and to the generosity of the Central Government to look after the poor. This stimulus to sell was so great that, to the amazement of the people at home and abroad, the exports of cereals from Russia, up to the date of the imperial ukase putting an embargo on wheat, have been officially found to be practically equal to those of last year, thus seriously complicating this whole question.

Moreover, this enormous export, in view of the shortage in crops, should be looked at, inasmuch as to-day the elevators of the Baltic and Odessa ports, as well as the storehouses on the different lines of railroad, are full to overflowing with grain that has been contracted for and in part paid for by English and German buyers. This mass of grain, practically the property of foreign dealers, is quietly waiting for the imperial gates to open and let it pass through. It is evident, as the major portion of this stored grain is practically owned abroad, that it will be extremely difficult, even in an imperial form of government, to prevent it from going to its owners. It would seem that the Central Government will have to pay a price for this grain sufficiently high as to make it an object for the foreign owners to release it. Thus it appears that the landed proprietors and foreign and home speculators, seeing the bountiful harvest of the United States and the crop shortage in Russia, have improved their opportunity and have succeeded in cornering the market, and, with the aid of the embargo on all breadstuffs, they will probably succeed in selling their grain at a handsome profit to the Russian Government for the relief of the distressed in the famine districts. Rye, which is the preferred food of the peasants, is at this time 100 per cent dearer in rubles than last year.

The peasants, or farm laborers, are generally very poor, never having any money. In some cases the lower classes, who were formerly serfs, have improved to such an extent that they have bought small farms, but which are, in many cases, mortgaged at a high rate of interest. Often their grain is also mortgaged in the field, so that in times like these the small farmers suf-

fer equally with those who have nothing. The Russian peasantry, largely descendants of serfdom, are not yet competent to compete with the combined methods of the rich farmers and the merchant classes. The same problem presents itself here as in the South of the United States, and the Central Government, although seeing the difficulty, admits that it is not easy to solve. Until the laborer in Russia can be freed from the bondage of the landed proprietor a shortage in crops in any considerable portion of the Empire is certain to bring suffering to the poor of that region.

The efforts of the Government to solve successfully the capital and labor question in Russia have been given a fresh impetus by the present unhappy state of the laboring classes in the stricken districts, and it is to be hoped that in due course these efforts may effect a decided improvement in the relations of the laborer to his employer.

I desire, in closing this report, to say that the Russian Government, as well as benevolent societies and individuals, has been alive to the seriousness of this question from the first, and has taken active and prompt measures to relieve the distressed; so that to-day there is a network of charity thrown about the famine sufferers of Russia that is fast relieving them of their distress, and thereby improving the general tone of the country.

J. M. CRAWFORD,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, December 24, 1891.

POLICE AND PRISONS OF JAMAICA.

REPORT BY CONSUL ESTES, OF KINGSTON.

The total strength of the Kingston police force is 184. The number in each grade of regular constabulary is as follows: Inspector, 1; subinspectors, 3; sergeant-majors, 2; sergeants, 10; corporals, 9; first-class constables, 34; second-class constables, 110; and in water police—sergeant, 1; first-class water police, 2; second-class water police, 12.

The inspector receives a salary of $1,703.27 per annum, including $486.65 per annum paid him as detective inspector, forage allowance for two horses at $1.09 per day, one servant allowance at 36 cents per day, and Government quarters. The subinspector receives a salary of $632.64 per annum, lodging allowance of 48 cents per day, forage allowance for one horse at 54 cents per day. Of the sergeant-majors, one is paid $1.21 per day as sergeant-major for Kingston, the other $1.25 per day as detective sergeant-major. The others are paid as follows per day:

	Cents.
Sergeants of the regular constabulary and water police	85
Corporals of the regular constabulary and water police	73
First-class constables	64
Second-class constables (regular constabulary)	56

The chief of police is Edmund Peel. A whistle signal is used.

The total number of arrests in 1890 was 3,922. The total number of arrests for drunkenness in 1890 was 74.

The principal prisons of Jamaica, with number of inmates, are as follows:

Prisons.	Males.	Females.	Total.
General penitentiary, Kingston	470	74	544
Middlesex and Surrey county jail, Spanish Town, St. Catherine	78	18	96
St. Catherine district prison, Spanish Town, St. Catherine	203	.....	203
Falmouth district prison, Falmouth, Trelawney	92	32	124
Hanover district prison, Lucea, Hanover	40	18	58
Black River, S. T. prison, Black River	22	15	37
Port Antonio, S. T. prison, Port Antonio	16	10	26
Total	921	167	1,088

The population of the island is about 634,000 and of the city of Kingston about 49,000.

W. R. ESTES,
Consul.

UNITED STATES CONSULATE,
Kingston, Jamaica, December 14, 1891.

AIX LA CHAPELLE PLATE GLASS.

REPORT BY VICE-CONSUL BERTRAM.

I regret to have to report that it was impossible for me to find out the cost of grinding, smoothing, and polishing for rolled and plate glass, as well as crystal plate, owing to the fact that the managers of the stock company St. Gobain (Chauny & Cirey), at Stolberg, decline to give any information whatever, even visitors not being allowed to see the works.

I managed, however, to find out that the method of holding the glass on the grinding table is as follows: The glass is placed on a wooden table, of which the whole top must be covered; in case one sheet of glass is too small they must fill out the empty space with other small pieces; they then nail strips of wood all around the table to keep the glass steady and prevent it from moving during the grinding.

After the glass is ground it is taken from the table and placed on a second table to be polished. On this table the whole surface is covered with wet gypsum, and in this matrix the sheet of glass is laid. After the gypsum is dry the glass is firmly held in place and can be polished. Thin glass is not manufactured here.

FRANZ BERTRAM,
Vice-Consul.

UNITED STATES CONSULATE,
Aix la Chapelle, December 10, 1891.

PALESTINE IN 1891.

REPORT BY CONSUL MERRILL, OF JERUSALEM.

QUARANTINE AND HEALTH.

The rigid quarantine that has been enforced against all Syrian ports since the first week in October and that different sections have established against each other has been a greater calamity to the country than can be described in words.

With the exception of scarlatina, which prevailed in the early summer, Palestine has been during the past year unusually healthy. There had been some cholera in Aleppo, far north, and in the Red Sea ports, far south of us; but such precautions were taken in Egypt in the case of the Mecca pilgrims that there was no cause of alarm from that source. Certain of these pilgrims, however, returning by way of the desert, introduced the disease into Damascus. Allowing these pilgrims to enter Damascus without the most careful inspection was an act of criminal negligence; still it was done, and the natural consequences followed. Cholera has not prevailed there extensively, and not a single case has occurred in any other part of the country. It is now (end of November) practically extinct, but the quarantine still continues, to the great detriment of travel and commerce.

A quarantine station was established at Jericho to intercept any persons coming from the north by the route east of the Jordan; another at Sinjil, six hours north of Jerusalem, on the road to Nabloos (Shechem) and Nazareth; and another at Bas el Ain, two hours north of Jaffa, to intercept all the coastwise travel from the north. The station at Bas el Ain was near a vast marsh, and fully half of the people who have been confined there—the time is ten days—have been seriously, some of them dangerously, ill with malarial fever. Of the thirty travelers whom I know to have been confined there not one had been within 60 miles of Damascus, the only infected district, nor had they seen any person who had been in Damascus. Moreover, every person entered the station sound and well, while half the entire number came away with health impaired and suffering from fever, which in several cases nearly proved fatal.

Among the number confined at this place was our vice-consul and his wife, and when their time had expired the vice-consul wanted to pay his dues, which he did in silver. The officials had him place the money on a rock, and they directed water to be thrown over it to cleanse it, lest by it they might be infected with cholera. The same officials did not hesitate, however, to accept from the vice-consul a package of cigarettes which he had been carrying in his pocket. A physician from Jerusalem went to the station to see a friend who was confined there; and, although he did not enter the tent, he was seen to shake hands with his friend, and he was at once compelled to enter the quarantine and serve his time with the rest.

Such instances could be multiplied; but it is not necessary, for those that I have mentioned will serve to indicate the unreasonable methods by which quarantine is conducted in this country.

As Germans and English, as well as Americans, were confined at this place, the consuls of these two nations, with myself, called on the governor to request, not that quarantine be removed or made more favorable for our respective subjects than for others, but that the time they had spent in reaching Bas el Ain—three, four, or five days, as the case might be—be counted off from the prescribed ten days, especially as they had not been near any infected person or near the infected district. We were kindly received, but our request was not granted.

Quarantine, as now managed, is such a shock to the business interests of the country that one would think the Government would be interested in modifying it in ways which might easily be done, so that travel, commerce, mails, and business of all kinds need not come to a standstill.

Severe quarantine in the autumn and early winter months generally means the loss to the people of Jaffa alone of $300,000 to $500,000 in their orange crop. This year, however, English vessels have come every week and taken loads of oranges to England, such steamers making, of course, no quarantine. The shipments are not so large as usual, but this outlet for their orange crop is regarded by the people as a special providence.

Apart from the injury to commerce, the shutting out of travelers during so many months—for we do not expect the quarantine to be removed for some weeks yet—means cutting off from the people a source of income amounting to several hundred thousand dollars. Not less than 5,000 persons—and I have taken pains to enumerate the different classes interested, and think that probably the number ought to be increased to any point up to 10,000 persons—are dependent upon travelers for a large part of their living, and hundreds of individuals and families are now suffering because this supply of ready money has failed.

I am aware that to state this fact in this general way does not make the impression it would could I go into details and speak at length of individual cases of suffering.

The ability of the people of this country to endure oppression, hardships of many kinds, and even suffering is a fact with which I have long been familiar; but the events of the past few months have forced it anew upon my notice, and I speak of it with admiration.

FUEL.

The question of a supply of fuel is becoming more serious every year, and consequently a more important one in a commercial aspect.

The fuel of the towns throughout the country (reference is not made to the peasants in their villages, who use dung largely for fuel) consists of wood and charcoal. Limekilns and public bake ovens consume chiefly small bushes and shrubs, which grow abundantly on the hillsides and which could not be used in a house.

Native families do most of their cooking with charcoal, and a large majority of them have no fire except in a brazier, which in the coldest weather is lighted and left standing in the middle of the room.

European families, public houses, and institutions, which require proper fire during the cold weather, burn roots of trees that are dug from the ground. There is scarcely a family in Jerusalem that burns what is known in America as wood, that is, trunks and limbs of trees cut into proper size. The term "wood" in this country refers to the roots of trees. This fuel is brought to market full of sap and loaded with dirt and small stones as taken from the ground and sold at an average price, this year (1891), of $2 for 600 pounds, all wood being sold by weight. The price increases and the supply grows less year by year, and every year it must be brought from a greater distance.

The law passed some years since against the destruction of olive trees is still in force, and, although every year a considerable number of such trees are cut down, the price of olivewood is so high as to place it beyond the reach of most purchasers. The trees that are cut down are taken largely by olivewood-workers.

Oil cake, or the refuse from oil presses, which burns well, is only a limited quantity, and the attempts to use kerosene for heating purposes do not seem to be successful. Steamers which touch at Jaffa have, of course, their own supply of coal, and coal is used to some extent in flouring mills, although the largest flouring mill in Jerusalem uses wood altogether.

An attempt has been made this year by a certain merchant in the city to introduce coal in the shape of pressed blocks of coal dust and tar, the blocks weighing 5 kilograms, or about 12 pounds, each, this being found at present the most convenient form. The supply comes from Belgium. The duty on it at Jaffa is 8 per cent. It is sold here, delivered at the house, at 80 francs ($15.44) for 100 kilograms, which is 1 French ton. Four hundred tons have already been imported, which has been taken chiefly by convents, religious institutions, some public houses, and a few private families.

It is estimated by those who have used it that 1 ton of coal (cost 80 francs) is equal to 2½ tons of wood (cost 100 francs).

Recently an order has been issued by the Government relating to the use of wood in mills, that after three months from the date of the order, that time being considered sufficient for mills to make other arrangements, no more wood must be used, the chief reason given being the fact that it is becoming scarce everywhere and correspondingly high in price.

RAINFALL AND CROPS.

Good crops depend not only upon the actual amount of rain, but quite as much upon the distribution of it over the rainy season. If the early rains are withheld till December, plowing is hindered and the next crop is likely to be small. The early rains may fall during October and early in November, the proper time for them, and as soon as the ground is soft the plowing begins and the seed is sown. The crops, however, will not mature unless the latter rains fall in their proper season also, which is the first part of April.

During the winter of 1890–'91 there was an ample supply of rain, but the latter rains were withheld entirely; so that the yield of wheat and barley was far less than that of the year previous. Hence a proper distribution of the rainfall is as essential as the amount of it in order to insure good harvests.

The present year rain fell in October and early in November, so that a great deal of the plowing is already done, and in some sections seed has been sown.

TAXES.

The manner of assessing and collecting taxes has sufficient interest to merit attention. In former times it was customary to farm out the taxes for each district, as Hebron, Jaffa, Nabloos, etc., to one responsible person, who in turn would sublet the same to a number of individuals, each receiving a certain section or a certain number of villages. The principal tax farmer generally had nothing to do with the actual collecting of the taxes, but served only as a middleman between the Government and the smaller tax farmers. He managed always, however, to make it a profitable business.

Some years since this method was changed entirely, and the Government levied a certain amount upon each village according to its size and the amount of land under cultivation. This method continued about five years and has recently been superseded by a revival of the ancient plan, with the difference that now the Government becomes practically its own broker, and, instead of renting a certain district to a certain rich man to sublet to others, it deals directly with the smaller tax farmers. One such person may have three, five, or ten villages, as the case may be, and the Government asks for bids. One man offers a certain sum, another a sum a little larger, and the Government telegraphs to the highest bidder that if within three days no one appears to offer more he can have that section.

The peasants hardly know which system, the old as modified at present or the method of taxing by villages, is the most burdensome. Either system is attended with unnecessary cost and hardship, for money enough must be raised not only to satisfy the Government, but also to make the tax farmers rich; for every person in the Empire knows that such an office is, as it has been from time immemorial, a lucrative one.

This year, when the yield in general is less by one-third than last year, the taxes remain the same. When the peasants protest the tax farmers reply: "Your crops are less, to be sure; but then you get a better price, and hence can afford to pay as high a tax as last year."

IMPROVEMENTS AND SANITARY MATTERS.

During the year 1891 repairs and additions were made to thirty old houses, and sixty new ones were built in and about Jerusalem. Most of the new houses are outside the town, and they are built in a much more spacious way than was formerly done or than could be done within the walls. This remark does not apply to Jewish houses, which are built in clusters, are very small, generally of two rooms each, and many of them are constructed of the

cheapest materials—mere shells that will scarcely protect the occupants from the weather.

Considerable work has been done on the Bethlehem and Hebron carriage road, so that it is in a fair condition. The carriage road to Jericho (20 miles) is progressing slowly, with no immediate prospect of its being completed.

Since the repaving of the streets of Jerusalem was undertaken about eight years ago it is easier to keep them clean, inasmuch as a smooth stone pavement can be more readily swept than a rubble pavement. Very little effort, however, is made in this direction, and the filth in some parts of the town is simply abominable. After the cholera appeared in Damascus a more vigorous attempt was made at sweeping and removing the most objectionable filth; but this was only a spasm, and the relapse has already taken place. As always heretofore, the sanitary condition of this city is in a bad way.

JAFFA AND JERUSALEM RAILROAD.

At the very end of November negotiations, which had been going on for a long time, were completed and the French company purchased land for a railway station about three-fourths of a mile south of Jerusalem. The amount of land was 28,000 square meters and the price paid 120,000 francs, that is, about 7 acres for the round sum of $24,000. The first plan was to have the station much nearer the city, near an old Turkish burying ground, but the Moslems made such objections as to render this impracticable. The position chosen will necessitate a street railway (tramway), and no less than four different parties are now in Constantinople trying to obtain the right (firman) to lay such a track. Landowners in the vicinity of the site selected for the station say that the price paid is very low; on the other hand, disinterested parties say it is exorbitant. The depot site once fixed, as it now is, no doubt land in that neighborhood will rise in value, certainly it will in the price demanded.

For some time past construction trains have passed at a very slow rate of speed between Jaffa and Ramleh, a distance of 12 miles, and they now come up nearly to Artouf, about 12 miles further, near the point where the road enters the mountains. The most difficult part of the road is yet to be built. With all loose earthwork—and much of the road on the plain is of this character—the heavy winter rains make havoc, and, as the rainy season has just set in, probably much that is now looked upon as completed road will have to be remade next spring. The obstacles in the way of railroad construction in this country are many, and some of the most serious ones are due to the unfriendliness of the Government to any such project. In time, perhaps not as soon as its friends claim, the road will be completed and communication with Jaffa will certainly be easier than it is at present. There is, to my mind, no evidence that its completion will make any marked change in the business of Palestine or bring about a new era of prosperity for this country, as has been so ardently predicted.

REVENUE.

The income of the province of Palestine, or this pashalic, the past year amounted to something over $500,000, divided as follows:

Public revenue:	
Tithes	$246,202.76
Land tax	168,313.66
Sheep and goats	38,645.54
Military tax	26,470.04
Shop tax	10,239.00
Total public revenue	489,871.00
Municipal revenue:	
Carriage road from Jerusalem to Jaffa	11,250.00
Gate tax	12,500.00
Education and public works	3,027.00
Miscellaneous municipal taxes	8,333.00
Total municipal revenue	35,110.00
Grand total	524,981.00

Under "tithes" is included wheat, barley, durra, olives, and all kinds of crops. The military tax is paid by Christians and Jews, who are thus exempt from military service. Within the walls of Jerusalem property is exempt from taxation, and the "shop tax" (the tax upon the income of any place of business) is likewise not paid in the city, but it is levied upon shops and places of business outside the city and in all other towns. The tax which every loaded animal—camel, mule, or donkey—that enters Jerusalem is required to pay is called the "gate tax," and the sum is devoted to paving the streets and for some other internal improvements or needs.

PRICES CURRENT.

Articles of common consumption vary in price at different seasons of the year, and likewise according to the quality of the goods.

Table showing the prices current of articles of common consumption.

Articles.	Price.	Articles.	Price.
Wheat.....per 48 pounds...	$0.60 to $1.08	Potatoes.....per pound...	$0.01⅓ to $0.02⅔
Barley.....per 36 pounds...	.48 to .60	Onions.....do.....	.01 to .02½
Durra.....per 42 pounds...	.56 to .68	Soap.....do.....	.08 to .10
Beans.....per pound...	.03½ to .04⅔	Sesame oil.....per gallon...	.66⅔ to .80
Peas.....do.....	.02½ to .04	Olive oil.....do.....	.53⅓ to .66⅔
Flour:		Wine.....do.....	.37½ to .96
Russian.....do.....	.04⅔ to .06⅔	Grapes:	
Inferior.....do.....	.02½ to .03⅓	For wine.....per pound...	.01 to .01¼
Smeed.....do.....	.03⅓ to .04⅙	For table.....do.....	.01 to .02

The quantity of grapes brought into the city this season was about 42,000 pounds. The Latin and Greek convents each took 2,100 pounds; other monasteries, 1,800 pounds; public houses and wine shops, 15,000 pounds;

private families (for wine), 12,000 pounds; and for sale in the markets, 9,000 pounds.

The importation of flour from Russia (Odessa) has ceased, owing to shortness of the wheat crop in that country; but the condition of things in Russia does not, for some reason, seriously affect the price of wheat in Palestine.

LIQUOR LICENSES.

It may be of sufficient interest to mention that Jerusalem has within and without the walls one hundred and thirty-five places where liquor is sold, and all pay a tax, those within the walls not coming under the exemption rule mentioned above. The tax this year amounted to $2,292, which is not reckoned in the foregoing amount, but is sent directly to Constantinople.

GENERAL REMARKS.

Potatoes, which have been imported chiefly from France, are being raised now to a considerable extent in the German and Jewish colonies on the Plain of Sharon. In some of these colonies and in the neighborhood of Jaffa Indian corn is being cultivated with very satisfactory results, the price the past season reaching as high as $1.25 per bushel.

The shipment of oranges from Jaffa for the month of November just past was 15,000 cases, against 21,000 cases for the corresponding month of 1890. The yield this year is good, the difference being accounted for by the quarantine, which disarranges everything.

A report from the consular agent, Mr. E. Hardegg, shows the imports at Jaffa to have amounted during the past year to $1,578,425 and the exports to $1,454,700.

The condition of the Jews was fully stated in my report of October 3, 1891. The order forbidding their immigration, issued early in July, is still in force, and it has had a most salutary effect upon all land transactions, prices of which had previously been crowded up to an abnormal and ruinous figure.

SELAH MERRILL,

UNITED STATES CONSULATE, *Consul.*

Jerusalem, December 5, 1891.

TRADE AND INDUSTRIES OF POLAND.

REPORT BY CONSUL RAWICZ, OF WARSAW.

The official statistics for 1888 and 1889 were published only toward the end of last year, and the deficiencies which they contained had to be supplied by private information. I have consequently been unable to transmit sooner my report for the said two years.

EQUIVALENTS.

For the better understanding of the statistics hereinafter given, I submit the following table of equivalents: 1 Russian chetvert is equal to 5.775 Eng-

lish bushels; 1 Russian berkovetz is equal to 10 poods, or 400 Russian pounds; 1 Russian pood, or 40 Russian pounds, is equal to 36.112 English pounds; 1 Russian verst is equal to 0.663 mile; 1 Russian vedro is equal to 2.707 gallons; 1 Russian dessiatine is equal to 2.7 acres; 1 gold ruble is equal to 4 francs, or 77.2 cents; the paper ruble is variable, in 1888 and 1889 having an average value of 45 to 52 cents; 1 German thaler is equal to 90 copecks in paper currency; 1 German centner is equal to 50 kilograms, or 120 Russian poods.

POPULATION.

The Kingdom of Poland, incorporated into the Russian Empire, contains a territory of 111,975.4 square versts with 8,256,562 inhabitants, the density of the population amounting thus to 73.7 inhabitants per square verst (0.66 square mile). It is divided into ten governments with one hundred and fourteen towns and one thousand two hundred and eighty-six country parishes, the number of the inhabitants of towns forming 17.7 per cent of the whole population.

The two last decades had witnessed a notable and steady growth of the population, which has suffered, however, a slight abatement during the last couple of years, owing, perhaps, to an increase of emigration among the working classes, mainly to America.

The presumable number of inhabitants in the Kingdom of Poland was:

1885	7,960,304
1887	8,153,612
1889	8,256,562

Out of this bulk of population 75.9 per cent are Roman Catholics, 10.2 of other Christian persuasions, and 13.9 per cent Jews.

The births increased 4,210 over 1888 and the deaths 8,745; the marriages decreased 6,424, as shown by the following table:

Table showing the population of the Kingdom of Poland in 1889.

Districts.	Inhabitants.			Deaths.		
	Male.	Female.	Total.	Male.	Female.	Total.
City of Warsaw	219,308	236,544	455,852	6,813	6,236	13,049
Governments:						
Warsaw	481,822	491,823	973,645	13,355	13,644	26,999
Kalisz	408,107	415,533	823,640	9,297	9,243	18,540
Kielce	349,317	350,891	700,208	7,329	7,733	15,062
Lomza	300,934	301,853	602,787	8,604	9,016	17,620
Lublin	488,913	507,638	996,551	12,701	13,213	25,914
Petrikau	556,421	534,796	1,091,217	10,565	10,299	20,864
Plock	303,645	311,193	614,838	6,897	7,442	14,339
Radom	354,809	368,906	723,725	6,504	7,871	15,375
Suvalki	290,602	308,321	598,923	7,556	7,466	15,012
Siedlec	334,860	340,316	675,176	9,435	10,413	19,848
Total	4,088,738	4,167,824	8,256,562	100,056	102,566	202,622

Table showing the population of the Kingdom of Poland in 1889—Continued.

Districts.	Births.					Marriages.
	Male.	Female.	Legitimate.	Illegitimate.	Total.	
City of Warsaw	11,072	11,053	19,040	3,085	22,125	4,258
Governments:						
Warsaw	22,189	22,462	43,201	1,450	44,651	8,574
Kalisz	16,529	16,455	31,694	1,290	32,984	6,581
Kielce	13,812	13,946	27,110	648	27,758	5,406
Lomza	12,014	12,325	23,832	507	24,329	4,019
Lublin	19,204	21,419	39,526	1,097	40,623	7,928
Petrikau	18,090	17,789	34,718	1,161	35,879	7,250
Plock	11,829	11,616	23,252	1,193	24,445	3,908
Radom	15,834	16,180	31,282	732	32,014	4,896
Suvalki	10,058	9,858	19,090	826	19,916	3,705
Siedlec	12,063	13,235	23,872	1,426	25,298	4,318
Total	162,694	167,338	316,617	13,415	330,032	60,843

FREIGHT AND INSURANCE.

The average charges for freight and insurance for corn and other goods on the Vistula, in sailing boats, or *gabars*, towed by steamers were as follows per centner of 50 kilograms to Dantzic:

From—	Freight charges.		Insurance.	
	1888.	1889.	1888.	1889.
	Copecks.	*Copecks.*	*Per cent.*	*Per cent.*
Zawichost	46	48	1½	1½
Pulawy	40	44	1	1
Warsaw	15	18	¾	¾
Plock	14	16	¾	¾
Vlocklavek	10	12	¾	¾
Nieszava	10	12	¾	¾

COMMERCE ON THE VISTULA.

The trade on the Vistula has suffered a considerable decrease in comparison with former years, chiefly owing to the fact that the railroads, and principally the Vistula Railway Company, have lowered their freights and absorb most of the local and foreign trade.

During both reported years nearly two thousand boats of all kinds circulated on the Vistula. The value of goods shipped on them in 1888 amounted to 5,323,493 rubles, showing a decrease against 1887 of 1,035,004 rubles. Six hundred and two rafts of timber, *i. e.*, one hundred and two more than in 1887, representing a value of 2,076,850 rubles, were floated down the Vistula for Dantzic.

In 1889, owing to the good harvest of the preceding year and to the high level of water during spring, there took place an increase of commercial movement on the Vistula, and the value of goods shipped on boats rose to 6,901,255 rubles. At Warsaw alone six hundred and thirty boats touched the

shore, against five hundred and twenty-five boats in 1888. The value of timber floated in rafts down the river was also nearly 2,000,000 rubles.

COMMERCE WITH THE UNITED STATES.

In 1889 the exports from Russia, Poland included, to the United States were valued at 1,215,705 rubles, consisting mainly of the following: Wheat, 869,265 poods; wool, 19,150 poods; ropes, 2,421 poods.

The imports into Russia from the United States amounted to 20,604,070 rubles in 1888 and 50,739,264 rubles in 1889, and were chiefly the following:

Articles.	1888.	1889.
	Poods.	*Poods.*
Cotton	1,886,407	4,868,734
Resins (galipot)	885,923	675,137
Dyewoods	353,746	445,678
Colophony	122,413	122,789
Hides	93,511	115,199
Coffee	.....	20,643
Animal grease	51,870	22,696
Seeds	.....	160,329
Agricultural implements	20,824	96,963

From the foregoing it may be inferred that Russia's trade with the United States is rapidly augmenting. It is difficult, however, to ascertain what part Poland takes in that trade, as Polish merchants deal but little directly with the United States and draw the supplies of American goods they require from wholesale dealers either in Germany or in the Russian ports of the Baltic, such as Libau, Riga, and St. Petersburg.

ARTISAN INDUSTRY OF WARSAW.

This is the most important and most prosperous of all industries in which the population of Warsaw is engaged. Its production is steadily increasing from year to year. It gives occupation to one-tenth of the inhabitants of this city without counting their families. The goods produced by the Warsaw artisan not only supply the local wants, but also find willing buyers in remote markets of the Russian Empire, where Warsaw articles are favorably noted. For the further promotion of this industry a special museum has been founded by private subscription at Warsaw, and it answers well the purpose of forming the artisans' good taste, of teaching them the means of improving their products, and of securing for them large and profitable orders.

The following table shows the comparative number of persons engaged for three years in the artisan industry at Warsaw:

Description.	1887.	1888.	1889.
Trade masters	6,563	6,873	7,121
Trade undermasters	15,902	17,102	16,643
Apprentices	20,913	22,188	22,823
Total	43,378	46,163	46,587

The value of the products, raw materials purchased, and looms and implements of all the artisan workshops was as follows:

Year.	Product.	Raw materials.	Looms and implements.
	Rubles.	*Rubles.*	*Rubles.*
1887	36,215,100	23,159,000	1,721,270
1888	40,008,480	25,684,016	2,355,510
1889	41,699,130	26,163,292	2,892,060

The value of the products of the principal artisan industries of Warsaw during 1888 and 1889 was as follows:

Description.	1888.	1889.
	Rubles.	*Rubles.*
Butchers	8,624,000	8,910,400
Bakers	5,084,000	5,076,900
Shoemakers	4,482,400	4,811,000
Tailors	4,248,000	4,077,400
Pork butchers	2,445,000	3,291,000
Millers	1,791,460	1,610,960
Confectioners	1,320,000	1,427,400
Milliners	969,000	1,020,200
Furriers	945,000	986,700
Masons	848,500	1,043,900
Seamstresses	694,300	664,800
Carpenters	634,800	678,200
Chemists	615,000	660,600
Joiners	542,400	563,400
Jewelers	508,500	490,900
Pavers	463,000	356,200
Glovers	416,800	423,700
Locksmiths	322,400	324,700
Stonecutters	279,600	481,900
Lithographers	235,700	100,960
Upholsterers	231,300	203,900
Photographers	195,400	121,800
Watchmakers	160,600	153,100
Painters	103,800	103,700

FACTORIES OF WARSAW.

The number of factories in Warsaw and the value of their product during the two reported years show no notable difference from the figures given in former reports for preceding years.

The following table will give a comparative idea of their activity:

Year.	Number of factories.	Number of workmen.	Value of product.
			Rubles.
1887	347	16,430	30,036,450
1888	352	17,599	30,956,365
1889	348	17,827	31,599,405

The following table contains a list of the principal Warsaw factories, according to the order of their importance, in which but very slight differences from preceding years can be observed. Notwithstanding a certain increase in the value of their product, especially of factories making machinery, metal articles, plated ware, and of other similar metallurgical establishments, on the whole the situation of the Warsaw factories can not be considered as particularly thriving.

Table showing the number of factories in the city of Warsaw, the number of workmen, and the value of their product.

Factories.	1888.			1889.		
	No.	Workmen.	Value of product.	No.	Workmen.	Value of product.
			Rubles.			*Rubles.*
Machines and agricultural implements	18	3,972	6,587,892	21	3,728	6,164,761
Tanneries	21	1,284	4,425,700	22	1,309	4,472,895
Distilleries of spirits	14	247	2,885,700	12	262	3,151,364
Tobacco	8	2,058	2,572,580	6	1,840	2,315,650
Breweries	27	470	2,133,477	18	446	2,013,375
Metal articles	10	1,152	2,082,410	6	1,192	2,218,000
Steam mills	11	381	1,359,329	8	286	1,071,650
Silver and plated ware	8	1,036	1,231,366	8	1,163	977,621
Furniture	12	1,012	956,700	15	1,242	1,132,090
Tin articles	11	701	607,000	11	712	730,280
Gas	1	380	522,780	1	420	757,000
Chemicals	3	166	522,140	8	187	647,100
Lamps	5	484	265,000	8	330	284,650
Perfumes	5	116	457,426	6	112	428,000
Bakers	4	181	429,600	4	186	430,400
Bronze and copper articles	9	295	357,415	10	571	530,250
Ribbons	10	410	289,976	10	395	379,000
Woolen stuffs	6	293	266,900	5	466	530,600
Hats	16	242	249,700	10	183	306,900
Flowers and ties	4	329	210,500	19	413	233,131
Confectionery and chocolate	4	72	205,600	10	222	826,415
Carriages	11	164	150,050	11	189	128,300
Soap and candles	1	9	120,000	1	8	90,000
Pianos and organs	5	118	109,200	11	189	128,000
Looking-glasses	3	38	101,875	3	41	84,050
Combs and horn products	1	146	88,200	5	174	115,940
Asphalt	5	92	74,940	5	101	83,650
Millstones	4	56	73,000	3	49	48,820
Brushes	2	62	64,000	3	94	177,417
Steel articles	3	84	21,910	3	82	38,400
Clocks	2	97	41,000	1	91	26,160
Pencils	1	24	10,000	2	56	61,000
Miscellaneous	107	1,428	272,999	82	468	1,026,045
Total	352	17,599	30,956,365	348	17,827	31,599,405

COMMERCE OF THE CITY OF WARSAW.

For the right of carrying on trade in the city of Warsaw license certificates must be had—of the first and second guild for wholesale operations and of retail sale for small shopkeeping.

The income collected in Warsaw during three years from the above tax was the following:

	Rubles.
1887	573,947
1888	655,685
1889	781,836

WOOL FAIRS.

The wool fair held at Warsaw once a year from June 15 to 18, inclusive, gave the following results during the two years in view:

Description.	1888.	1889.
	Poods.	*Poods.*
Sheep's wool brought to market	41,613	60,206
Remained from preceding year	9,664	15,277
Total	51,277	75,283
Sold during the fair	36,000	38,000
Left unsold	15,277	37,283

The prices realized for sheep's wool during the fair were as follows per centner:

Description.	1888.	1889.
	Thalers.	*Thalers.*
First sort, extra fine		130 to 147
Second sort, best	102 to 124	95 to 105
Third sort, middling	90 to 101	80 to 90
Fourth sort, ordinary	70 to 90	68 to 78
Fifth sort, deficient	55 to 72	60 to 67

The difference of prices between the two years may be accounted for by the fact that in 1889 the exchange value of the Russian paper currency rose considerably, and during the time of the fair of 1889 the paper ruble was worth 52 cents, whereas in June, 1888, the same ruble was worth only 45 cents.

HOP FAIRS.

In 1889 (for the first time) a hop fair was instituted, to be held each year on September 25 and continue ten days. At that date 1,650 poods of hops were brought to market, out of which 900 poods were sold during the fair for 19 to 28 rubles per pood for first quality and 15 to 17 rubles per pood for second quality, and 750 poods of hops remained unsold in stock.

Great hopes are entertained for the future as to this branch of trade, for the numerous local breweries have, until now, mostly obtained their hops from abroad. It has been found out that Polish hops are exported to Germany, whence, after having undergone a process of preparation called sulphuring, they return to this country as genuine Bavarian hops. It is ex-

pected that Polish hops will compete successfully with the German product and will attain equal prices.

BANKING.

The annual reports published by Warsaw banks for the years 1888 and 1889 prove that there has taken place a slight decrease in the range of their business. The figures showing the totals of their operations during each of the two reported years have diminished from 6 to 10 per cent as compared with the figures in 1887.

The Bank of Poland, belonging to the Government, which had the right of emitting paper currency, has not existed since 1886. It has been liquidated and united to the State Bank of Russia, having its seat at St. Petersburg, which has opened nine branch offices in the Kingdom of Poland, one at Warsaw and eight in the principal provincial towns.

The chief private banking companies on the shareholders' limited system having their seat at Warsaw are the following:

Banks.	1888.	1889.
Commercial Bank of Warsaw:	*Rubles.*	*Rubles.*
Total operations at Warsaw	506,275,766	520,969,676
In branch office at St. Petersburg	150,832,887	142,718,763
Total	657,108,653	663,688,439
Capital	6,000,000	6,000,000
Reserve fund	1,166,854	1,276,252
Net profits	576,042	625,098
Discount Bank of Warsaw:		
Total operations	242,879,787	222,516,243
Capital	2,000,000	2,000,000
Reserve fund	342,669	382,579
Net profits	193,815	184,466
Bank of Mutual Credit:		
Total operations	51,919,590	48,554,037
Capital	1,175,162	1,110,094
Reserve fund	247,598	282,743
Net profits	124,928	95,062
Industrial Bank of Warsaw:		
Total operations	4,849,943	4,765,166
Capital	288,241	280,514
Reserve fund	160,630	180,862
Net profits	39,915	30,802
Land Mortgage Bank of the Kingdom of Poland:		
Total assets	169,320,720	182,438,679
5 per cent mortgage bonds	112,317,521	125,822,265
Reserve fund	7,151,949	8,454,490
Premises and furniture	824,706	905,154
Deposits	45,717,724	57,502,411
Other liabilities	3,308,820	2,769,940
City of Warsaw Mortgage Bank:		
Total assets	38,481,018	38,496,263
5 per cent mortgage bonds	33,807,400	33,611,912
Reserve fund	3,141,498	3,071,785
Furniture	5,652	6,453
Liabilities	1,526,466	1,806,113

The dividends to shareholders were as follows:

Banks.	1888.	1889.
	Per cent.	*Per cent.*
Commercial Bank of Warsaw	8½	9
Discount Bank of Warsaw	9½	8½
Bank of Mutual Credit	10	8
Industrial Bank of Warsaw	8	8

WARSAW FIRE INSURANCE COMPANY.

The Warsaw Fire Insurance Company was established in 1870, with a capital of 2,000,000 rubles, of which only one-half was paid in. Its annual reports show the following figures:

Description.	1888.	1889.
	Rubles.	*Rubles.*
Premiums and other income	1,282,270	1,288,355
Reinsurance, costs, and disasters	1,101,961	1,108,227
Net profit	180,309	180,128

Several Russian insurance companies work in the Kingdom of Poland, as also one American—the New York Life Insurance Company. They publish reports only for the whole bulk of their operations in the Russian Empire, without any special mention about their operations in Poland.

RAILWAYS.

The following statements were published by the railway companies for the years 1888 and 1889:

Table showing the length of the railroads and the dividends they paid.

Railroads.	Length of roads.	Dividends.	
		1888.	1889.
	Versts.	*Per cent.*	*Per cent.*
Warsaw-Vienna line	325	13	9
Warsaw-Bromberg line	138	4	(*)
Lodz line	27	14	15
Warsaw-Terespol line	199	(†)	(†)
Vistula line	507	‡5	‡5
Ivangorod-Dombrova line	453	(ǂ)	(ǂ)

* The Government had to add to the 4 per cent dividend guarantied to shareholders.

† The Government had to add 487,050 rubles in 1888 and 310,037 rubles in 1889 to make up the guarantied dividend.

‡ Guarantied dividend.

ǂ For both years the Government had to add about 1,000,000 rubles in order to pay the guarantied 5 per cent dividend.

Table showing the receipts and expenditures of the railroads in 1888 and 1889.

Railroads.	1888.	1889.
Warsaw-Vienna line:	*Rubles.*	*Rubles.*
Passengers	1,430,827	1,694,721
Goods	6,817,699	7,092,800
Luggage and animals	135,829	180,766
Government transports	31,112	10,406
Miscellaneous	1,148,298	414,770
Total earnings	9,563,765	9,393,363
Expenditure	4,926,022	4,838,188
Balance in favor of company	4,637,743	4,555,175
Rent to Government, sinking fund, etc	2,504,586	2,248,614
Net profit	2,133,157	2,306,561
Warsaw-Bromberg line:		
Passengers and luggage	277,332	259,472
Goods	616,925	553,148
Miscellaneous	179,893	152,380
Total earnings	1,074,150	965,000
Expenditure	784,280	845,522
Net profit	289,870	119,478
Lodz line:		
Passengers and luggage	109,155	128,474
Goods	597,536	535,362
Miscellaneous	67,824	205,698
Total earnings	774,515	869,534
Expenditure	314,628	371,285
Balance in favor of the company	459,887	498,249
Rent to Government, sinking fund, etc	266,094	293,179
Net profit	193,793	205,170
Warsaw-Terespol line:		
Military transports	60,064	.....
Passengers and luggage	509,467	.....
Animals	139,447	.....
Goods	1,299,095	.....
Miscellaneous	263,767	.....
Total earnings	2,271,840	2,645,386
Expenditure	1,867,592	2,064,170
Balance in favor of company	404,248	581,261
Vistula line:		
Military	51,824	.....
Passengers and luggage	843,457	.....
Goods	3,233,359	.....
Miscellaneous	569,062	.....
Total earnings	4,697,702	4,855,321
Expenditure	3,272,323	3,391,210
Balance in favor of company	1,425,379	1,464,111
Ivangorod-Dombrova line:		
Passengers and luggage	407,712	.....
Goods	1,349,565	.....
Miscellaneous	182,525	.....
Total earnings	1,939,802	2,201,426
Expenditure	1,695,810	1,887,547
Balance in favor of company	243,992	313,879

The St. Petersburg-Warsaw Railway, of which 260 versts run across the Kingdom of Poland, publishes no special report about that part of the line.

INDUSTRY IN THE PROVINCES.

The factory industry of the Kingdom of Poland is principally developed in the governments of Petrikau, Radom, and Warsaw. Cotton, wool, and linen manufactures exist chiefly in the towns of Lodz, Zyrardow, Ozorkov, Zgierz, etc.; iron works at Starachovice, Ostrovice, Chleviska, Nicklan, etc.; coal mines on the Silesian frontier, near Dombrova and Sosnovice. Sugar manufactories, which have not prospered during the two years in view so well as formerly, owing to the heavy fall of prices on sugar, are dispersed all over the Kingdom.

The great majority of the sugar factories of Poland take a share in the syndicate of two hundred and thirty-two Russian sugar manufactories formed at Kiev for the purpose of exporting, even at the risk of some loss, one-fourth of the total yearly produce of each factory, in order that the home market should not be overburdened with sugar. Thus, of 29,000,000 poods of sugar yearly produced in Russia about 7,000,000 poods are exported, chiefly to England.

In 1888 there existed in Poland: Sugar manufactories, 41; workmen employed, 16,507; land under beet root, 38,766 dessiatines; beet root employed, 4,203,052 berkovetz; raw sugar produced, 4,249,385 poods; molasses, 865,137 poods.

The other principal manufactures existing in the same year (1888) in Poland were:

Kinds.	Number of factories.	Value of product.
		Rubles.
Wool and cotton	644	91,526,000
Wooden articles	173	3,101,000
Chemicals	48	2,077,000
Animal products	307	9,537,000
Brick, lime, glass, etc.	251	3,924,000
Metals	232	20,466,000
Alimentary products	592	32,922,000
Miscellaneous	42	493,000
Total	2,289	164,046,000

The number of workmen employed was 101,716 adults and 4,152 minors.

The table following shows the exact number of factories in each of the ten governments of the Kingdom of Poland, the value of their product, and the number of workmen employed.

Table showing factory returns for Poland, 1889.

Designations.	Factories.	Workmen.	Value of output.
Government of Warsaw:	*Number.*	*Number.*	*Rubles.*
Linen	5	8,466	5,510,556
Cotton and wool	7	1,146	1,926,036
Paper	4	1,283	946,902
Iron	9	370	612,800
Agricultural implements	4	96	43,130
Chemicals	9	128	284,930
Matches	2	65	32,400
Tanneries	38	138	227,851
Grease and margarine	3	13	48,620
Soap and candles	18	170	531,077
Combs	2	54	30,300
Cosmetics	2	44	159,000
Petroleum products	1	30	56,000
Bricks	84	1,205	516,270
Earthenware	12	559	269,314
Glass	3	250	206,684
Sugar	19	7,701	9,644,053
Distilleries of spirits	46	321	3,705,880
Breweries	31	210	542,525
Liquors	8	44	222,094
Vinegar	11	35	115,084
Salt	1	36	35,000
Steam mills	17	174	1,008,068
Starch	6	134	76,640
Succory (chicory)	5	170	174,187
Miscellaneous	6	24	12,420
Total	343	22,866	27,237,841
Government of Kalisz:			
Cotton	8	940	877,510
Cloth	32	1,641	1,078,705
Ribbons	2	137	104,000
Tapes and laces	14	359	289,000
Agricultural implements	13	150	88,880
Metal articles	9	64	28,000
Tanneries	46	257	254,640
Soap and candles	9	18	36,180
Gas	1	6	12,000
Bricks	62	269	70,170
Earthenware	39	286	102,876
Glass	4	241	129,370
Sawmills	11	58	242,670
Sugar	5	1,940	1,669,381
Distilleries of spirits	65	520	3,217,175
Breweries	15	121	271,845
Liquors	2	14	100,700
Steam mills	7	28	75,770
Confectionery	20	33	62,140
Miscellaneous	2	15	11,600
Total	364	7,147	8,722,612
Government of Kielce:			
Tanneries	17	54	52,824
Soap and candles	5	15	24,060
Paper	1	240	300,000
Cotton and cloth	12	223	143,492
Sawmills	49	142	97,035
Zinc mines	2	556	80,046
Glass	2	28	11,910

Table showing factory returns for Poland, 1889—Continued.

Designations.	Factories.	Workmen.	Value of output.
Government of Kielce—Continued.	*Number.*	*Number.*	*Rubles.*
Marble	2	39	12,400
Bricks	67	151	44,471
Iron	8	171	136,150
Sugar	2	650	1,198,983
Distilleries of spirits	31	201	612,701
Breweries	12	113	128,686
Starch	4	41	22,851
Steam mills	2	35	84,660
Miscellaneous	6	23	18,540
Total	232	2,673	2,968,809
Government of Lomza:			
Soap and candles	4	31	17,960
Tanneries	36	66	43,060
Sugar	2	385	435,000
Distilleries of spirits	28	204	1,057,390
Breweries	34	132	191,465
Tobacco	1	133	69,200
Liquors	4	45	85,700
Sawmills	5	50	38,660
Steam mills	5	54	585,500
Bricks	47	778	329,271
Tape and lace	3	63	30,400
Bones, burnt	2	16	48,400
Miscellaneous	3	19	14,103
Total	174	1,976	2,939,109
Government of Petrikau:			
Cotton	359	29,104	44,662,401
Silk	14	819	1,005,733
Linen	28	1,878	445,420
Cloth	413	21,997	35,740,978
Dyehouses	42	1,346	1,849,506
Sugar	2	620	455,810
Distilleries of spirits	42	314	2,281,289
Breweries	37	491	1,331,532
Liquors	4	83	474,700
Vinegar	4	22	111,945
Sawmills	46	1,732	860,846
Paper	13	716	1,052,270
Steam mills	9	132	524,929
Bakehouses	3	59	329,400
Starch	6	67	65,120
Soap and candles	73	151	493,819
Glass	10	1,106	566,225
Cement and lime	66	919	822,795
Brickkilns	83	1,037	394,272
Agricultural implements	12	791	662,770
Metal articles	8	99	462,102
Matches	1	151	80,000
Gas	2	71	236,477
Iron works	7	260	142,373
Bones, burnt	2	73	38,250
Coal mines	14	10,255	6,055,118
Miscellaneous	8	39	56,320
Total	1,308	74,342	101,301,998

Table showing factory returns for Poland, 1889—Continued.

Designations.	Factories.	Workmen.	Value of output.
Government of Plock:	*Number.*	*Number.*	*Rubles.*
Iron foundries	4	12	29,100
Distilleries of spirits	16	104	1,064,678
Liquors	1	6	29,400
Breweries	17	75	266,318
Tanneries	12	41	20,202
Brickkilns	71	441	86,798
Sugar	3	995	1,088,800
Soap and candles	4	9	17,237
Glass	1	11	25,000
Matches	2	23	18,500
Sawmills	24	208	217,554
Steam mills	3	18	31,355
Agricultural implements	2	22	12,095
Miscellaneous	5	27	14,675
Total	169	1,992	2,841,712
Government of Radom:			
Distilleries of spirits	28	168	589,741
Liquors	2	13	39,200
Nails	2	38	99,500
Iron works	35	3,400	3,799,268
Agricultural implements	2	25	16,188
Brickkilns	17	93	25,093
Tanneries	39	118	226,044
Sawmills	10	82	44,940
Steam mills	8	40	264,610
Machines	1	47	56,987
Metal articles	2	19	38,400
Breweries	12	55	74,717
Sugar	2	540	677,023
Glass	1	12	18,000
China and earthen ware	1	127	42,800
Iron foundries	3	894	1,073,500
Miscellaneous	8	51	30,722
Total	173	5,722	7,046,733
Government of Lublin:			
Sugar	4	1,265	959,395
Steam mills	11	132	780,750
Distilleries of spirits	53	391	2,852,996
Breweries	32	199	313,719
Iron works	4	111	83,600
Brickkilns	126	561	233,411
Paper	3	30	19,720
Glass	3	193	97,090
Tanneries	31	133	130,427
Starch	4	48	24,225
Sawmills	37	156	145,846
Agricultural implements	6	114	91,512
Tobacco	3	184	116,750
Gas	1	15	17,212
Cloth-weavers	15	52	31,140
Miscellaneous	9	38	28,190
Total	342	3,622	5,927,983
Government of Siedlec:			
Distilleries of spirits	56	365	2,479,036
Liquors	2	23	182,115
Breweries	32	132	156,385

Table showing factory returns for Poland, 1889—Continued.

Designations.	Factories.	Workmen.	Value of output.
Government of Siedlec—Continued.	*Number.*	*Number.*	*Rubles.*
Sugar	1	350	444,680
Steam mills	9	80	292,644
Glass	8	461	406,150
Tanneries	64	128	76,550
Brickkilns	62	158	70,688
Soap and candles	4	23	17,360
Sawmills	9	97	107,871
Nails	1	80	36,000
Agricultural implements	2	28	27,895
Matches	1	30	13,700
Miscellaneous	7	29	28,611
Total	258	1,984	4,299,225
Government of Suvalki:			
Distilleries of spirits	23	125	622,910
Breweries	33	118	144,243
Liquors	2	17	84,500
Iron foundries	4	64	64,182
Glass	1	18	21,200
Brickkilns	43	274	108,310
Tanneries	43	172	122,890
Starch	2	16	21,600
Metal articles	2	39	16,387
Steam mills	2	18	19,234
Bristle, washing	4	102	43,450
Miscellaneous	5	40	41,200
Total	174	903	1,310,106
Grand total	3,537	123,227	164,596,128

ALCOHOL.

The following table shows the quantity of alcohol, mostly made of potatoes, which was produced in Poland and the part thereof which was exported, chiefly to Hamburg:

Year.	Produced.	Exported.
	Vedros.	*Vedros.*
1886	3,409,572	1,696,976
1887	3,685,775	2,134,634
1888	3,528,335	1,412,205

The average consumption of alcohol yearly per inhabitant was 0.22 vedro (2.7 gallons).

PIG IRON AND COAL.

In 1888 the quantity of pig iron produced in Poland amounted to 3,809,071 poods, and the quantity of coal extracted in the same year was 17,589,137 poods. Most of the iron works of this country still use charcoal for fuel.

TAXES.

The taxes collected by the government of the Kingdom of Poland in 1888, exclusive of local, municipal, and parish taxes, ran up to the following amounts:

Tax.	Amount.	Tax.	Amount.
Direct tax:	*Rubles.*	Indirect tax—Continued.	*Rubles.*
Land and personal	8,946,332	Matches	90,163
Trade patents	2,363,153	Custom-house	12,373,939
Income	505,942	Stamps	2,237,099
Total	11,815,427	Registration	1,734,828
Indirect tax:		Inheritances	254,637
Spirits and drinks	17,562,690	Railway passengers	700,575
Tobacco	1,242,049	Fire insurance	226,920
Sugar	3,471,701	Total	40,336,342
Petroleum	441,741	All taxes	52,151,769

PUBLIC HOSPITALS.

The statistics of the public hospitals in Poland in 1888 were as follows: Hospitals, 145; beds, 8,319; physicians, 1,027; officers of health, 1,710; midwives, 867; sick entered at hospitals, 351,021; ill with syphilis, 18,855; vaccinated, 251,082.

EDUCATION.

The following table shows the condition of education in Poland in 1889:

Table showing the number of schools and students in the Kingdom of Poland in 1889.

Districts.	Schools.					Students.		
	University.	Higher.	Primary.	Private.	Total.	Male.	Female.	Total.
City of Warsaw	1	23	150	77	251	23,153	8,348	31,501
Governments:								
Warsaw		6	496	56	558	20,057	12,160	32,217
Kalisz		4	404	38	446	15,670	9,027	24,697
Kielce		5	323	15	343	13,472	6,833	20,305
Lomza		3	207	8	218	15,377	3,351	18,728
Lublin		10	430	20	460	18,069	7,526	25,595
Petrikau		10	514	194	718	26,883	14,762	41,645
Plock		7	215	63	285	10,810	6,229	17,039
Radom		7	189	28	224	8,081	3,831	11,912
Suvalki		5	181	17	203	7,977	2,710	10,687
Siedlec		4	294	16	314	11,845	3,007	14,852
Total	1	84	3,403	532	4,020	171,394	77,784	249,178

The number of schools increased 41 and the number of students 2,573 over 1888.

AGRICULTURE.

The state of agriculture in Poland was far from thriving during the two reported years, chiefly owing to the low prices of corn both on home and on foreign markets and to the state of indebtedness of middle-sized farms. During the year 1889 prices on the Warsaw corn market were as follows per pood, the exchange value of the paper ruble being equal to 52 cents:

Articles.	Price.	Average price.
Wheat:	*Rubles.*	*Rubles.*
Best	95 to 108	101.50
Middling	86 to 102	94.00
Ordinary	79 to 94	86.50
Rye:		
Best	65 to 88	76.50
Middling	64 to 86	75.00
Barley	62 to 108	85.00
Oats	58 to 96	77.00
Peas	73 to 122	97.50
Buckwheat	70 to 90	80.00

The following tables give full statistics of the crops of Poland in 1889:

Table showing the quantity of agricultural products sown.

Government.	Winter wheat.	Winter rye.	Barley.	Oats.
	Chetverts.	*Chetverts.*	*Chetverts.*	*Chetverts.*
Warsaw	58,005	221,844	34,489	184,099
Kalisz	31,700	230,009	27,040	148,017
Kielce	50,674	124,917	75,152	124,478
Lomza	22,146	133,588	14,077	70,408
Lublin	81,362	202,796	66,089	167,988
Petrikau	19,282	222,747	36,321	151,531
Plock	45,495	212,206	20,710	112,378
Radom	35,064	173,590	46,725	153,245
Suvalki	19,093	169,937	33,923	135,499
Siedlec	33,323	203,575	26,554	142,718
Total	397,144	1,898,109	381,080	1,390,311

Government.	Buckwheat.	Peas.	Other spring grains.	Potatoes.
	Chetverts.	*Chetverts.*	*Chetverts.*	*Chetverts.*
Warsaw	10,778	24,194	1,626	754,647
Kalisz	9,414	17,854	985	875,492
Kielce	3,545	16,431	5,341	587,054
Lomza	19,852	11,700	973	447,437
Lublin	47,071	20,353	3,291	595,405
Petrikau	8,761	9,476	1,220	825,307
Plock	17,504	19,138	387	620,033
Radom	13,603	16,841	2,271	543,662
Suvalki	7,872	16,393	590	440,933
Seidlec	19,726	15,388	1,811	540,987
Total	158,126	167,768	18,495	6,230,957

Table showing the quantity of agricultural products harvested.

Government.	Winter wheat.	Winter rye.	Barley.	Oats.
	Chetverts.	*Chetverts.*	*Chetverts.*	*Chetverts.*
Warsaw	260,200	809,500	130,700	506,600
Kalisz	140,600	780,600	78,800	374,800
Kielce	224,500	444,000	281,100	419,600
Lomza	69,000	373,300	38,900	176,400
Lublin	409,300	820,400	255,300	522,800
Petrikau	64,500	582,100	88,900	258,800
Plock	162,900	716,300	75,300	286,600
Radom	145,300	526,400	141,300	351,100
Suvalki	60,100	592,100	143,900	451,300
Siedlec	123,700	651,500	72,800	301,900
Total	1,660,100	6,296,200	1,307,000	3,649,900
Decrease	709,800	1,744,000	639,800	2,184,800

Government.	Buckwheat.	Peas.	Other spring grains.	Potatoes.
	Chetverts.	*Chetverts.*	*Chetverts.*	*Chetverts.*
Warsaw	43,500	67,300	14,100	3,136,400
Kalisz	32,500	37,600	14,500	3,593,000
Kielce	12,100	33,900	48,000	2,585,100
Lomza	78,800	25,900	8,000	2,042,400
Lublin	163,300	61,800	39,300	2,748,100
Petrikau	28,400	15,100	12,100	3,145,700
Plock	76,000	48,500	3,300	2,932,400
Radom	46,500	33,700	28,100	2,394,900
Suvalki	36,200	38,600	1,700	2,035,100
Seidlec	63,300	29,400	21,100	2,421,400
Total	580,600	391,800	193,600	27,034,500
Increase	25,800			688,700
Decrease		253,400	12,000	

The number of domestic animals in Poland in 1888 was as follows:

Animals.	Number.	Number per 100 inhabitants.	Number per 100 dessiatines of productive land.
Horses	1,204,342	14.8	15.9
Cattle	3,023,392	37.1	39.7
Sheep	3,754,665	46.2	49.5
Hogs	1,499,077	18.5	19.8

IMPORTS AND EXPORTS.

Official statistics give the total quantity of different goods, bound outward or inward, which cross the frontier stations of the Kingdom of Poland during one year, without stating from what port of the Empire they proceed or for which of its provinces they are destined. On the other hand, Polish railroads put into communication with the German and Austrian frontiers some of the most fertile provinces of the Russian Empire. In

consequence of this, many of the goods conveyed across the Polish frontier stations merely effect their transit through the Kingdom of Poland, but can not be reckoned as being the exports or imports of this country, on account of which it is difficult to estimate them at their real value. Still, an approximate estimate may be made of Polish imports and exports from the detailed accounts of conveyance of goods on railways, as also from other private sources of information. Hence it may be inferred that about 40 per cent of the whole imports and exports crossing the Polish frontiers are of Polish origin or destined for Poland, whereas the remaining 60 per cent belong to the general commercial movement of the Russian Empire.

The following tables show the whole importation and exportation movement across the Polish frontiers from and to Germany and Austria, a part of which, in the proportion just indicated of 40 per cent, may be taken as representing the foreign trade of the Kingdom of Poland. Of course, the trade of this country with the rest of the Russian Empire, which is very considerable, can hardly be estimated even in an approximate way, and hence this subject has not been considered in the present report.

Table showing imports into the Kingdom of Poland.

Articles.	1888.	1889.
Fruits, fresh and dry....poods...	91,422	104,371
Articles of food....do.....	218,102	117,518
Corn....do.....	152,647	49,536
Potatoes....do.....	35,221	19,412
Clay, chalk, and gypsum....do.....	737,263	1,165,450
Stones and slates....do.....	404,345	743,678
Cement and lime....do.....	233,014	565,009
Fish, fresh and conserved....do.....	112,526	123,053
Coal and coke....do.....	16,431,372	17,171,161
Chemicals....do.....	353,886	228,051
Guano....do.....	156,891	232,329
Pitch and tar....do.....	223,215	152,103
Timber....do.....	273,847	2,437,813
Cork wood....do.....	21,656	17,607
Mineral wax....do.....	314,687	257,723
Paraffin, vaseline, etc....do.....	30,439	58,322
Seeds....do.....	164,776	300,109
Flowers....do.....	10,413	22,082
Nuts....do.....	10,599	50,642
Medicines....do.....	12,471	11,974
Cotton, raw....do.....	381,250	521,363
Jute, raw....do.....	176,931	225,364
Flax and hemp....do.....	18,369	8,915
Rags....do.....	161,997	110,622
Wood mash (papier-maché)....do.....	187,770	189,336
Hides....do.....	213,332	344,440
Grease....do.....	76,385	31,841
Whale oil....do.....	25,059	42,551
Cattle and horses....number...	1,839	1,606
Fireproof bricks....poods...	575,780	856,144
Drain pipes....do.....	29,708	35,880
Joiners' articles....do.....	145,255	301,278
Baskets and mats....do.....	7,165	18,514
Agricultural implements....do.....	197,430	322,174
Pictures and drawings....do.....	2,179	3,193
Books and prints....do.....	41,252	45,311

Table showing imports into the Kingdom of Poland—Continued.

Articles.		1888.	1889.
Flour and starch	poods	116,865	174,690
Rice	do	10,294	14,653
Salt	do	372,601	1,054,553
Oranges and lemons	do	203,283	366,963
Herrings, salt	do	2,239,516	2,471,649
Coffee	do	72,125	75,623
Cacao	do	13,639	11,249
Spices and pepper	do	38,805	16,321
Tobacco	do	3,753	1,348
Tea	do	254,331	188,723
Liquors	bottles	102,048	154,697
Wine:			
In casks	poods	70,116	205,572
In bottles	bottles	71,435	71,779
Sparkling wines	do	122,099	132,498
Ale and stout:			
In casks	poods	19,742	23,111
In bottles	bottles	34,847	30,076
Mineral waters	do	467,887	784,852
Furs	poods	8,576	21,193
Leather	do	28,315	29,710
Silk	do	40,254	38,837
Wool yarn	do	605,755	540,254
Cotton yarn	do	32,183	32,104
Thread	do	91,069	108,120
Iron	do	2,882,424	4,112,374
Steel	do	164,583	184,215
Copper	do	11,979	206,644
Lead	do	13,651	20,849
Tin	do	181,467	191,228
Zinc	do	58,109	238,074
Rubber	do	47,572	54,320
Dyewoods	do	34,451	53,828
Hops	do	26,732	24,516
Looking-glasses	square inches	1,641,950	1,802,642
Metal articles and machines	poods	1,064,988	1,281,743
Paper	do	31,070	30,012
Watches	number	244,732	354,156
Miscellaneous	poods	248,640	296,846

The total value of imports was as follows: In 1888, 114,403,430 rubles; in 1889, 139,663,628 rubles.

Table showing exports from the Kingdom of Poland.

Articles.		1888.	1889.
Wheat	poods	18,787,899	15,039,733
Rye	do	8,380,670	8,442,508
Barley	do	6,529,168	6,643,979
Oats	do	3,082,586	3,583,652
Millet	do	375,253	258,698
Peas	do	2,566,135	1,820,769
Buckwheat	do	471,108	848,322
Beans	do	74,851	353,094
Bran	do	8,727,314	10,060,052
Potatoes	do	1,382,438	1,575,366
Flour and starch	do	11,998	32,868
Fruit, fresh and dry	do	321,655	219,791

Table showing exports from the Kingdom of Poland—Continued.

Articles.		1888.	1889.
Anise and cumin	poods	3,802	46,878
Beef and pork, fresh and salt	do	48,148	213,743
Butter and cheese	do	149,708	191,288
Eggs	number	243,685,686	459,203,380
Molasses	poods	437,087	608,311
Honey	do	225	.....
Mushrooms	do	.....	1,119
Fish	do	80,124	145,112
Sugar	do	1,323,137	608,437
Tobacco	do	27,569	83,693
Cigarettes	number	10,910,110	11,838,925
Alcohol	degrees	154,779,722	124,296,253
Timber	poods	24,121,854	60,130,982
Linseed	do	1,241,921	1,863,357
Hemp seed	do	531,729	541,512
Rape seed	do	1,151,364	1,433,735
Poppy seed and others	do	183,841	189,326
Clover and grass seeds	do	909,006	815,966
Various other seeds	do	338,872	206,022
Seedcake	do	2,243,949	3,117,198
Hay and straw	do	694,758	1,190,603
Flax	do	4,226,782	4,268,662
Flax hurds	do	450,312	510,619
Hemp	do	2,317,102	2,985,638
Hemp hurds	do	143,726	239,425
Hides	do	152,365	292,451
Bones	do	521,897	864,615
Manure	do	125,718	145,991
Bristle	do	156,208	197,947
Feathers and down	do	42,131	91,406
Rags	do	382,450	335,288
Stones	do	4,539,384	5,134,000
Coal	do	924,284	842,772
Grease	do	8,352	20,286
Wool	do	232,904	425,420
Pitch and tar	do	216,281	296,772
Bark	do	66,612	95,320
Iron ore	do	439,103	.....
Turpentine	do	99,608	41,665
Poultry	number	3,854,697	3,388,218
Game	do	1,610,724	1,832,091
Horses	do	21,051	31,588
Sheep	do	12,794	46,787
Hogs	do	57,920	33,450
Wooden articles	poods	43,469	62,387
Metal articles	do	21,298	10,155
Mats	do	14,986	8,630
Ropes	do	82,143	93,885
Books	do	9,623	10,591
Miscellaneous	do	184,321	214,194

The total value of exports was as follows: In 1888, 147,106,590 rubles; in 1889, 179,174,611 rubles.

JOSEPH RAWICZ,
Consul.

UNITED STATES CONSULATE,
Warsaw, November 25, 1891.

TRADE AND INDUSTRIES OF THREE RIVERS.

REPORT BY CONSUL SMITH.

For a century or more Three Rivers has been one of the most conservative communities on earth. Founded by the fur-traders at a time when their traffic was the chief concern of the province, its earlier years were busy enough; but as trade ramified and commerce expanded Montreal and Quebec absorbed its external patronage and left it commercially stagnant. If it has seemed now and then to acquire new energy, it was merely, as a strong man turns over in bed, to adjust itself to a more profound repose.

The presence of iron ore in the neighborhood has several times filled the imaginations of the people with visions of wealth, and forges have been established and mills built only to end in disappointment. Cutting logs from the Government lands and manufacturing them into lumber for the American market was for some years a most profitable industry, but that, too, now that the higher grades of timber have been exhausted, in great measure belongs to the past.

But Three Rivers has turned over a new leaf. A few years ago several of the more enterprising citizens found their way to Massachusetts, and these brought back glowing reports from Lowell and Fall River. The migratory impulse grew so strong that it threatened to depopulate the city. In twelve months over 1,800 young men and women sought employment in those great manufacturing centers. The city fathers became alarmed. Stagnation was bad enough, but emigration was ruin. With quick apprehension they determined to have factories of their own, and to that end resolved:

> That, in order to induce capitalists to establish manufactories in our midst, the corporation agrees to give them every possible advantage that may be necessary to their success, as land without cost, exemption from taxation, harbor privileges free, etc., and to furnish such special aid as their individual cases may seem to require.

Thus secured against personal loss by failure, it was, of course, not difficult to find men who were willing to take the chances of success. A chair factory with a bonus of $4,000, an axe factory with one of $5,000, a lumber mill with a subsidy of $20,000, an iron-pipe factory with one of twenty acres of land and $20,000, and a shoe factory with a gift outright of $35,000 were soon erected and in active operation.

In a former report I stated that, upon a pledge of 100 acres of land within the city limits and $75,000, free harborage, and exemption from taxation for ninety-nine years, an English syndicate had been formed to build an abattoir and meat-canning establishment in the city for the benefit of the European markets. But, a rumor adverse to the local conditions reaching London, a committee was sent out by the stockholders to ascertain the facts; when, unluckily, it transpired that the promoter had—inadvertently, no

doubt—somewhat glossed the advantages of the place by representing the province of Quebec as groaning beneath the tread of cattle aching to be converted into English brawn and muscle, and that these patriotic herds were then actually being carried to Chicago to be butchered and shipped ignominiously as American beef to Liverpool and London. As the committee reached Canada in midwinter, when snowdrifts and not shorthorns were rampant upon her thousand hills and no cattle were to be seen, their indignation knew no bounds; and long before the snow melted the company was dissolved. However, the projector, nothing daunted by his discomfiture, hied him to New York and, it is now reported, has succeeded in organizing a new company upon the terms of the old.

Manufactures are as profitless where there is no money as gold is where fabrics are unknown. Each is useless without the other; it is in their union that commercial prosperity is engendered. With formidable foreign tariffs in front of them and no money at home, it is difficult to see how this fecund connection could have been expected at Three Rivers.

The chair factory ran twelve months and failed; the mill six months longer and passed in its dishonored checks. Of the solvency of those remaining it would be obviously improper for me to express an opinion.

It will be seen, therefore, that these municipal bounties have not resulted as favorably as was expected. The giver and the receiver are alike dissatisfied—the one because in seeking to keep its people at home it has burdened the rich with taxes to provide schools of instruction to qualify the poor for higher and more certain employment abroad, and the other because in consenting to benefactions they became the servants of a corporation whose every member proved to be a most zealous and exacting master, and both because their best-laid schemes have gone agley.

As an occasional American city may fall into decay and dream the dream of a second childhood, this experience of Three Rivers may not be wholly without interest to our people.

In shaping the destiny of a town human intelligence is often mocked by blind chance. While the municipal authorities were taxing their wits and their real estate in a hopeless endeavor to boom their charge, the paper manufacturers of the United States were anxiously looking around for supplies, and in less than twelve months from the time their attention was called to the St. Maurice forest, lying within the district and from which only the cedar and pine had been culled, 2,500 square miles of its timber passed into their possession.

The Laurentide Pulp Company, a New York association, with 324 miles of these "limits," has started a mill, the plant of which is said to have cost $600,000; and in 1890, the first year of its existence, all unknown and unadvertised as it was, it shipped to the United States alone 5,426,460 pounds of its product. The Glens Falls and Ticonderoga pulp companies, both of New York, have just acquired 537 square miles of these woodlands and will, it is understood, proceed at once to the erection of mills at this

point to prepare wood for their factories at home. Two large Michigan firms have holdings of 1,683 square miles, and another New York company is now negotiating for 1,500 square miles.

It seems never to have occurred to quiet, conservative Three Rivers that these refuse forests held her future wealth; that the stone which was rejected by the builder would become the chief corner stone. As these enterprises will furnish employment for at least 1,200 men, all of whom have to be fed and clothed, I need hardly say there is a boom in the spirits of the town.

The exports to the United States from this district in the year ended December 31, 1890, compared with 1889, were as follows:

Articles.	1890.		1889.	
	Quantity.	Value.	Quantity.	Value.
Hay.....tons...	31,735	$235,117	30,261	$276,474
Sheep.....number...	6,333	24,747	9,914	22,835
Horses.....do.....	67	7,294	36	4,666
Other animals.....do.....	539	200	.....	.....
Eggs.....dozens...	29,523	4,856	30,573	4,819
Potatoes.....bushels...	15,860	4,996	.....	.....
Peas.....do.....	95	76	.....	.....
Products of field and farm.....	.....	.....	.....	3,469
Lumber.....feet...	20,118,000	177,930	18,366,407	178,594
Shingles.....number...	9,930,000	24,040	11,350,000	24,581
Railroad ties.....do.....	30,614	4,625	.....	8,040
Telegraph poles.....do.....	9,145	4,978	.....	6,000
Other wood.....pieces...	13,210	810	.....	5,836
Laths.....	.....	735	.....	.....
Pulp wood.....cords...	4,290	11,827	.....	4,507
Wood pulp.....pounds...	6,509,700	51,558	.....	16,891
Hemlock bark.....cords...	1,760	8,910	504	2,496
Raw furs.....	.....	3,337	.....	6,903
Oxide of iron.....tons...	121	1,868	55	1,083
Miscellaneous.....	.....	19,075	.....	9,466
Total.....	.....	586,979	.....	576,660

Of exports to other countries there is no record kept.

The invoices for the year were far more numerous than ever before in the history of the consulate. The small difference in their aggregate value compared with that of the preceding year is due to the exceedingly low price of hay, the great staple of the district, in 1890.

The passage of the new tariff bill seems to have had no appreciable effect upon exports, at least so far as number and value are concerned, for the business of the consulate during the quarter ended December 31 was unusually heavy. When the first flurry caused by its passage was over, the people realized, despite the politicians, that the United States was their only market; and, when told what they could ship to the greatest advantage, set themselves to work to produce it. I confidently expect a still larger increase in their exports during the current year.

It is estimated that fully two-thirds of the American goods consumed here are purchased in Montreal and Quebec.

The imports from the United States direct were as follows:

Articles.	1889.	1890.
Flour and provisions	$19,881	$6,131
Molasses	5,040	5,397
Coal and coke	11,150	11,989
Pig iron	2,517	320
Molding sand, clay, etc	704	914
Leather and leather goods	9,539	6,011
Hides and furs	4,808	4,238
Machinery, tools, etc	3,018	752
Hardware	525	997
Lead, brass, and manufactures of brass	1,616	1,481
Platinum and silver manufactures	1,389	473
Woolen and cotton goods	2,642	1,682
India-rubber goods, etc	791	221
Manufactures of wood, furniture, etc	2,418	474
Musical instruments	136	158
Glassware	604	727
Books and prints	780	598
Acids and drugs	977	595
Tobacco	702	406
Toilet articles	215	.....
Wall paper	144	281
Grindstones	511	906
Resin	303	.....
Packages by mail	1,382	1,276
Dying and tanning articles	.....	4,091
Miscellaneous	12,104	10,153
Total	83,896	60,271

Though these figures may indicate a falling off in the demand for American goods, the facts would not justify that conclusion. The Three Rivers merchant is of the old-fashioned school, and when once supplied with goods never makes a purchase till his stock has been completely exhausted. Hoop-skirts may give way to kid-fits and poke bonnets yield to tam o'shanters in the outside world, but no change is made here till the last imported farthingale and prairie schooner has been sold. The beggarly account of empty boxes now in the stores foreshadows large importations in the spring.

NICHOLAS SMITH,
Consul.

UNITED STATES CONSULATE,
Three Rivers, 1891.

COMMERCE AND INDUSTRIES OF CORNWALL.

REPORT BY CONSUL FOX, OF FALMOUTH.

THE PILCHARD FISHERY.

The past season was a poor one, only about 16,000 casks being pickled. These were all landed by the drift-net boats, the seine fishery being a total failure. About 24,000 casks were forwarded to Italy, including over 10,000 casks which were kept in Cornwall from the previous season, while about 2,300

casks remain for exportation this year. Probably about 400 to 500 casks went to the New York market.

As usual, I annex a copy of Messrs. G. C. Fox & Co.'s annual circular, with statistics, etc., concerning this industry.

FALMOUTH, *April 29, 1891.*

The number of casks (238 pounds each) shipped during the past season to Italy was about 23,700, as per particulars annexed.

The fishery yielded about 16,000 casks, which is much below the average quantity; but this was supplemented by a stock of 10,000 to 11,000 casks kept in pickle on this side from the previous season, so that the Italian markets were kept well supplied.

There now remain in pickle for next season about 2,300 casks on this side and about 1,600 casks in Italy.

Throughout October and the first half of November no pilchards were caught, and the catches during December and January in the Plymouth district were less than usual, partly owing to the long distance the fish were from the shore and the prevailing northeasterly winds.

For the second time in our knowledge the seine fishery was a total failure, no fish coming close to the shore at the stations where seines are kept.

For several years a few casks have been sent to New York. This season rather more went forward to that city, perhaps 400 to 500 casks altogether.

Prices fluctuated during the season, varying from $5.59 to $7.53, cash, to curers.

It is probable that some of the fish shown as discharged at Genoa were subsequently sent to other ports from there, and about 200 casks included in the Bari column were landed at Brindisi.

The exports of pilchards during the season of 1890–'91 were as follows, in casks: To Genoa, 13,932; to Leghorn, 1,803; to Naples, 4,593; to Bari, 817; to Ancona, 21; to Venice, 2,487; total, 23,653.

CORNISH MINES.

I transmit particulars of the produce of Cornish mines for the year ended December 31, 1890, no later returns being obtainable. They are as follows:

Articles.	Quantity.	Value at works.
	Tons.	
Arsenic and arsenical pyrites	4,679	$137,157.43
China clay and china stone	393,509	1,308,601.85
Copper:		
Ore, dressed	5,271	74,462.31
Precipitate	2	194.66
Manganese ore	83	403.91
Ocher	35	340.65
Slates and slate slabs	12,147	116,333.68
Tin ore, dressed:		
From the mines	12,944	3,411,231.57
From open works	126	35,058.26
From foreshores and refuse of dressing floors	1,796	349,662.88
Tin obtained by smelting:		
From the mines	8,414	.....
From open works	82	.....
From foreshores and refuse of dressing floors	1,078	.....
Uranium ore	22	10,706.30
Wolframite	104	8,993.29

I submit herewith a parliamentary return of the various metalliferous mines working on October 28, 1890, in this and the adjoining country, which contains useful information as to the number of men working, kind of machinery in use, etc.

Table showing return of the various metalliferous mines within the stannaries of Devon and Cornwall now working.

Name of mine.	Persons employed underground.	Machinery other than ladders for raising and lowering the men.	Boring machines worked by compressed air.	Remarks.
Cornwall.				
Agar, Wheal	129	1 gig	4	
Basset, Wheal	156	do	3	
Basset, West	172	do		Flat lode.
Blue Hills	75	None		
Blue Hills, East	23	do		
Botallock	237	do	2	
Callington United	169	Gigs	3	
Camborne Consols	46	None		Working on small scale at present.
Carn Brea	437	Gigs	3	
Carnize, West	8	None		Shallow mine.
Condurrow, South	116	do		Preparing for cage.
Cook's Kitchen	116	Man engine and gigs.	3	Power sufficient for 5.
Cook's Kitchen, New	22	None	3	
Crofty, South Wheal	65	Gig	3	
Danescombe Valley	16	None		Entered from adit.
Dolcoath	605	Man engine and gig.	10	
Drakewalls	46	None		
Eliza Consols, Wheal	166	do		
Fortune, Great Wheal	45	do		Shallow mine.
Frances, South Wheal	169	Gig	2	
Frances, West Wheal	135	None	1	Flat lode.
Friendly, Wheal	6	do		60 fathoms from surface.
Grenville, West Wheal	28	do	2	Flat lode.
Grenville, Wheal	163	Cage	2	
Gwin and Singer	37	None		Shallow mine.
Killifreth	108	do		
Kitty, Wheal	98	do		Flat lode.
Kitty, West	62	do		Flat lode, 130 fathoms from surface.
Levant	350	Man engine	4	Ladders from 230 to 302.
Levant, North	56	None		
Lovell, The	10	do		Shallow mine.
Lovell, East Wheal	7	do		Do.
Metal and Flow	8	do		
Owles, Wheal	58	do		
Pedu-an-drea	92	Gig		
Phœnix United	284	None		Easy traveling road.
Phœnix, South	46	do		
Polberro	25	do		110 fathoms from surface.
Polcrebro	19	do		
Polyear	16	do		
Pool, East	289	Cage	4	
Prince of Wales	67	None		
St. Neot Quarry	8	do		Entered by incline.
Seton, West Wheal	129	Gig	1	
Sisters, Wheal	184	do	2	
Terras, New	21			

Table showing return of the various metalliferous mines, etc.—Continued.

Name of mine.	Persons employed under-ground.	Machinery other than ladders for raising and lowering the men.	Boring machines worked by compressed air.	Remarks.
Cornwall—Continued.				
Tincroft	235	Cage	3	
Tindene	37	None		Shallow mine.
Tin Era	7	do		Adit level only.
Tregragle	28	do		Entered from adit.
Tregrehan Consols	6	do		
Tregurtha Downs	146	do	1	
Treskerby, North	7	do		Shallow mine.
Trevaunance, United	23	do		100 fathoms from surface.
Uny, Wheal	109	Gig	1	
Uranium Mines	22	None	1	Shallow mine.
Devonshire.				
Atlas	18	do		Entered from adit.
Bertha Consols	30	do		53 fathoms from surface.
Crebor, Wheal	28	do		
Devon Great Consols	139	2 man engines	1	
Devon United	18	None		
Emily	8	do	2	Shallow mine.
Hexworthy	10	do		Do.
Gawton	41	do		
Golden Dagger	10	do		Do.
Great Week Consols	10	do		Do.
Langford	6	Cage		
Mid-Devon	17	None	1	
Molland	22	do		
Russell, Wheal	29	do	1	Do.
Spreacombe Valley	6	do		Entered from adit.
Tavy	6	do		

IMPORTS FROM THE UNITED STATES.

The following were imported into Falmouth waters from October 1, 1890, to September 30, 1891:

Cargo.	From—	Flag.	Tons.
Timber	Ship Island	British	1,072
Phosphate	Bull River	do	535
Do	Navassa	do	273

In the corresponding period of last year the number of such importations was eight.

IMPORTS FROM COUNTRIES OTHER THAN THE UNITED STATES.

Full particulars of these can only be obtained from the customs by payment. I have, however, as usual, collected the following information, but have no means of obtaining similar information concerning other ports in my consular district that are not in Falmouth waters.

Table showing imports from countries other than the United States.

Cargoes	Whence imported.	No. of vessels.
Oxen, eggs, bones, and tin ore	Spain	43
Bark, explosives, and phosphate of lime	Belgium	9
Barley, onions, potatoes, tin ore, gypsum, and oysters	France	9
Wheat, maize, and bones	Argentine Republic	8
Oats and timber	Sweden	8
Timber	Norway	8
Maize and barley	Turkey	6
Oats, beans, and potatoes	Germany	4
Sugar	Holland	3
Wheat and barley	Russia	3
Pyrites of copper	Spain	3
Bones and lemons	Italy	2
Bones	Morocco	2
Timber	Canada	1
Wheat	Chile	1
Barley	Denmark	1
Total		111

There were one hundred and thirty such importations in the corresponding period of last year, viz, from October 1 to September 30.

EXPORTS TO THE UNITED STATES.

Table showing the value of declared exports from the consular district of Falmouth to the United States during the four quarters of the year ended December 31, 1891.

Articles.	December 31, 1890.	March 31, 1891.	June 30, 1891.	September 30, 1891.	Total for the year.
Arsenic	$20,666.22	$5,719.89	$3,963.20	$6,076.83	$36,426.14
Artists' drawings	4,182.52	.....	.....	112.00	4,294.52
China clay	36,924.28	35,893.35	13,459.18	33,396.18	119,672.99
Mackerel	259.20	.....	.....	.....	259.20
Mining machinery	.....	18,745.51	.....	.....	18,745.51
Pilchards	1,344.28	270.81	.....	391.87	2,006.96
Rock drills	.....	232.32	.....	.....	232.32
Sheep	.....	.....	.....	291.99	291.99
Total	63,376.50	60,861.88	17,422.38	40,268.87	181,929.63
Total in preceding year	42,689.26	34,096.09	27,807.35	34,109.06	138,701.76
Increase	20,687.24	26,765.79	.....	6,150.81	43,227.87
Decrease	.....	.....	10,384.97	.....	.....

FALMOUTH AS A PORT OF CALL.

During 1889 there were 1,525 ships, with an aggregate tonnage of 967,511 tons. This return, therefore, shows a decrease of seven in the ships, but an increase of 13,575 tons in the tonnage, while there were only two American vessels, with a tonnage of 3,704 tons, as against nine, with a tonnage of 14,966 tons, in 1889.

The following return shows the number of vessels that arrived at Falmouth during the year ended December 31, 1890, not including ships of war and coasters:

Nationality.	No.	Tons.
British	660	563,245
Norwegian	302	122,893
German	168	103,728
Italian	125	73,247
Swedish	85	34,955
Danish	67	20,160
Dutch	36	23,110
Austrian	17	10,100
French	22	10,369
Russian	12	4,935
Greek	8	4,736
Spanish	5	1,250
Argentine	4	2,330
American	2	3,704
Belgian	2	1,179
Mexican	2	545
Turkish	1	600
Total	1,518	981,086

HOWARD FOX,
Consul.

UNITED STATES CONSULATE,
Falmouth, December 1, 1891.

TRANSIT TAX IN THE STATE OF AMAZONAS.

REPORT BY MINISTER CONGER, OF RIO DE JANEIRO.

In my report of July 27 last I stated that I had written our consular agent at Manaos for definite information in regard to the levying by the State of Amazonas of 5 per cent duty on transit shipments of rubber through that port, and that I had received information later from the minister from Peru that said tax was abolished and amounts already paid were ordered refunded.

To-day, however, I am in receipt of a reply from the acting consular agent at Manaos, inclosing a copy of a communication to him from the president of the State of Amazonas, with suggestions in regard to the refunding of said tax, which may be of importance to our importers who were compelled to pay the tax and are now entitled to its restitution.

I inclose a copy of Acting Consular Agent Kettle's letter.

E. H. CONGER,
Minister.

UNITED STATES LEGATION,
Rio de Janeiro, December 4, 1891.

CONSULAR AGENT KETTLE TO MINISTER CONGER.

[Inclosure in Minister Conger's report.]

SIR: With reference to your dispatch of July 25, I beg to state that I have received a communication to-day from the president of this State, being a reply to my inquiries, made with your authorization, under date of the 17th of August, in which it is stated that the duty formerly levied on transit shipments through this place has been abolished. The Government has asked the Congress to decide about the restitution of duties paid on such transit shipments during the period that the law to that effect was in force. Said Congress, owing to circumstances (political division of members), will not unite a sufficient number of members to be able to take the necessary steps this case may urge, and in all probability the president of the State will decree a budget for the coming financial year. In this case, I shall use my influence to have included in such budget the amount of about $60,000, which was paid in the above manner on transit shipments during the period of five months this law was in force.

It would be advisable for the interested parties in the United States (mostly New York) to make their claims in time, in order to recover the amounts they may be entitled to through having paid, by their agents at this place, at the time of shipment the said tax of 5 per cent.

CHARLES KETTLE,
Acting Consular Agent.

UNITED STATES CONSULAR AGENCY,
Manaos, October 20, 1891.

EXPORTS OF ICELAND.

REPORT BY CONSUL BRUCE, OF LEITH.

The following facts relating to the export of sheep, ponies, etc., were brought to this port by the last steamer from Iceland:

The export of sheep from Iceland has fallen considerably short of last season, the number being 20,000. The previous year's export was 30,000. The export of ponies, however, shows a considerable increase, the number being 2,000, against 600 for the previous year. The Icelandic fisheries have been fairly successful. In addition to the export of live sheep, a large number in the northern parts of the island were slaughtered and salted and sent to Copenhagen. There being little demand for sheep and prices low, holders of stock have decided to winter their flocks, they having a plentiful supply of fodder to enable them to do so at home. The season for haymaking has proved the best for a number of years. The fishing at the Färöes has been attended with marked success this season and still continues. Their harvest has also been good, and the crops were housed in good condition.

WALLACE BRUCE,
Consul.

UNITED STATES CONSULATE,
Leith, December 10, 1891.

NEW HARBOR AT MALMO.

REPORT BY CONSUL SHEPARD, OF GOTHENBERG.

In pursuance of instructions in dispatch of December 18, 1891, I have the pleasure to inclose herewith a copy in English of the "Prospectus of the prize competition respecting a design for the construction of a new harbor at Malmo," Sweden.

CHARLES H. SHEPARD,
Consul.

UNITED STATES CONSULATE,
Gothenberg, January 9, 1892.

PROSPECTUS OF THE PRIZE COMPETITION RESPECTING A DESIGN FOR THE CONSTRUCTION OF A NEW HARBOR AT MALMO.

[Inclosure in Consul Shepard's report.]

I.—THE SITE FOR THE NEW HARBOR.

(1) The plans for the proposed new harbor shall comprise the parts north and east of the dotted line in the accompanying map.*

The part south of the dotted line must not be encroached upon by the construction of the new harbor, except to fulfill the provisions of paragraph 10, under "conditions which the new harbor must fulfill."

(2) The mole marked K—L in the map concerns the plans only according as it may be thought necessary to provide communication for shipping traffic between the old and new harbors.

(3) The entrance channel concerns the plans in question so far as any widening thereof may possibly be considered necessary in order to provide a separate entrance into the new harbor or any alteration thereof may be demanded by the construction of the new harbor.

(*a*) In the map the position of the ground which enters into the plans, and which has partly been filled up, is given as it appears when the water is at its normal level.

(*b*) The natural depth of the water is indicated by the figures at each end of the "bottom curves" in the map. It has been ascertained by borings already made, and must therefore be assumed as a basis for the estimate of costs, that to a depth of 8 meters the bottom consists of about 5 centimeters of sand and 7.5 meters of hard clay.

(*c*) The design should contain an account, together with an explanatory sketch, of the means which may be found efficient to insure the guiding of vessels during thick fog to the entrance channel, and also to the different parts of the harbor.

(*d*) Under ordinary circumstances there is no alteration worthy of notice in the water level. In an extraordinarily high gale, however, the water may rise from 1 to 1.5 meters; when at its lowest (during southeast winds), the water may fall about 1 meter. The prevailing wind is northwest.

II.—CONDITIONS WHICH THE NEW HARBOR MUST FULFILL.

(1) The new harbor must include commodious berths for vessels of the largest size which, the depth of water in the sound being taken into account, may possibly put into Malmo, *i. e.*, of a draft of 7.3 meters.

---

*The accompanying map is only a rough outline to show the extent of the scheme proposed. Intending competitors may obtain, on application to the harbor board and payment of 7*s.* (amount to be charged forward through the post-office), a minute and accurate map of the harbor on a scale of 1: 4,000 meters, together with a plan giving the position of the harbor in relation to the sound.

Scale.
0 50 200 50 300 50 400 50 300
ARBOR AT MAL
1.5
0.3
U
0.6

(*a*) The plan to be drawn on a scale of 1:2,000 meters.

(*b*) The design to be made under the assumption that the work of constructing the harbor will be spread over a period of fifteen years. It should be accompanied by the designer's opinion as to the method which should be adopted in the construction of the harbor basin, and also as to the order in which the work should proceed, so that the parts of the harbor as they are completed may at once be put into use.

(*c*) It is assumed that the quays will be built on supports of sheet piling. The competitors are, however, quite at liberty to add a special proposal with regard to the employment of other building materials for the whole harbor or any part of it. All the necessary sectional drawings of the sea wall and the quays must be given on a scale of 1:100 meters, to illustrate the method of construction recommended.

(*d*) An exact description must be given of the bridges that it may be proposed to build within the new harbor. Separate main and sectional drawings on a scale of 1:100 meters should be given of the bridges that may possibly enter into the design.

(2) Within the new harbor or in the neighborhood thereof must be a berth for two steam ferryboats, with room on each for lines of rails for eight railway wagons.

Separate main and sectional drawings on a scale of 1:100 meters must be given of the harbor for the railway steam ferry.

(3) The scheme should be so arranged as to provide for the uture contingency of the establishment of a free port. A separate plan on a scale of 1:2,000 meters must be made of that part of the harbor scheme now in question which is intended for the establishment of the free port and accompanied by the requisite sectional drawings on a scale of 1:100 meters.

(4) That part of the ground which is not employed for other purposes shall be laid out in building plots and streets, the latter at least 15 meters and at most 30 meters broad.

(5) The design should give information as to the system of cranes best suited for employment in the new harbor, and also as to other necessary or useful machines for loading and discharging. A photograph should be inclosed of the cranes recommended, wherein their construction is distinctly shown.

(6) Lines of rails must be laid from the State railway station to such an extent and in such a manner as to effect the best arrangements for the cheapest possible transport of goods to and from the railway. A separate sketch on the same scale as the main plan must be made of the site of these lines of rails.

(7) On the plan must be indicated places for the building of—

(*a*) Warehouses with accommodation for the storing for lengthy periods of different sorts of goods. Separate main and sectional drawings must be given on a scale of 1:100 meters.

(*b*) Special warehouses with hoists for grain, in connection with one or more drying kilns. Separate main and sectional drawings must be given on a scale of 1:100 meters.

(*c*) Quarantine accommodation for imported cattle and a place for the inspection of cattle destined for exportation.

(*d*) Storehouses or sheds for the temporary storage of goods imported or destined for exportation. Separate main and sectional drawings must be given on a scale of 1:100 meters.

(*e*) Buildings for custom-house purposes, with special regard to the establishment of bonded warehouses.

(*f*) Requisite building for purposes of electric lighting.

(*g*) Offices for the harbor engineer and the harbor master, dwelling houses for the latter and the other necessary harbor police, and a yard for the harbor stores.

There must further be given in the plan—

(*h*) Space for the requirements of the coal trade and for the drawing up of a number of railway wagons sufficient for this purpose.

(*i*) Place for "kips" or some similar machines to be employed in the coaling of vessels.

(*j*) Place for manufactories, etc., of such a description as to require access to the quays for loading and discharging.

(*k*) Accommodation for the storage of timber.

(8) The sea front of the new harbor should, as far as possible, be so arranged as to afford throughout its length an easily accessible promenade, sufficiently sheltered from the waves.

(9) The design must embrace everything necessary for the complete construction of the harbor, *e. g.*, the paving of the streets with dressed stone or cobbles or their macadamization, sewers, gas pipes, and electric wires, as well as a water conduit. A separate drawing on the same scale as the main plan must be given of the necessary drainage, as well as the means for the conveyance of gas, electricity, and drinking water. Herewith must also be given vertical sections of the paving of the streets with dressed and macadamized stone.

(10) A means of communication for pedestrians, as well as vehicles, proportionate to the traffic that may be expected in the new harbor is required between the land belonging to the harbor and the east end of the town. This must be constructed in such a way as to avoid the disturbing of the traffic thereon by that in the State railway station. Separate main and sectional drawings of this part of the design should be given on a scale of 1:200 meters.

It is assumed that in the new harbor there will be no other passenger traffic than that resultant from the railway steam ferry.

III.—DESCRIPTION OF THE WORK.

The design shall be accompanied by a description in which an account, as explicit as possible, is given of the grounds and assumptions which, in addition to those now given, may have had influence on the construction of the design, and also of the nature of the proposals entering into the design which are not clearly evident from the plans.

IV.—ESTIMATE OF EXPENSES.

The estimate of expenses shall include the whole construction of the harbor as it will appear when fully completed according to the directions given above. To insure uniformity and convenience for comparison in the estimates of expenses, in appendix A are given the prices of the most important materials entering into the work, as well as the rates of wages to be followed in the estimation of the expenses.

The expenses must be given in detail, except in the following divisions, viz: Cranes and other machines for loading and discharging; buildings, except storehouses, sheds, and warehouses; the lighting arrangements; conduit for drinking water—in which cases the amounts shall be given in round figures.

All dimensions and quantities must be given according to the metrical system.

V.—STATISTICS.

As a guide to an estimate of the possible increase in the future of the trade of the harbor in different directions, in appendix B is given a statement of the development of trade during the last thirty years, both in the number of vessels and in the quantity of the most noticeable commodities.

VI.—THE ADJUDICATION AND AWARDING OF PRIZES IN THE COMPETITION.

(1) To adjudicate upon the designs sent in a jury has been appointed consisting of the following: Col. J. G. Richert, chief of the royal Swedish board of administration of roads and waterworks; Mr. F. Andreas Meyer, chief engineer of public works at Hamburg; Mr G. Royers, chief engineer of public works at Antwerp. Besides these there have been selected to become members of the jury, in case of hindrance to one or more of the above persons, the following: Capt. P. Laurell, of the corps of royal Swedish engineers; Mr. G. Franzius, chief engineer of the imperial dockyard at Kiel; Mr. Fr. De Winter, engineer, chief of the marine department at Antwerp.

The harbor board reserve to themselves the right, in case both one of the jurors and his substitute are prevented from taking part in the award, of selecting in their stead some other person of recognized experience in harbor construction.

(2) The jury may, if they think proper, associate with themselves, in order to obtain in full or in part their opinion as to the designs, the advising engineer of the harbor board and late director-general, Mr. C. G. Beijer, and the harbor engineer of Malmo, provided that these gentlemen do not take part in the competition; and also, in order to gain necessary information, to call in, as occasion requires, a business man resident at Malmo and the harbor master of Malmo.

(3) Three prizes of 8,000, 5,000, and 3,000 crowns (about £444, £277, and £166) are offered. These prizes will be awarded to those competitors whose designs are constructed in strict conformity with the instructions given above and are found by the jury to be the most deserving from both a technical and a practical point of view.

(4) The competitors are at liberty to send in alternative designs.

(5) In order to come under consideration, the designs must be sent to the harbor board by post so early that they may come to hand and their receipt be recorded by the secretary on the 1st of September, 1892, at latest. The packet must be sealed and inscribed with a legible description of the contents.

(6) The packets to be opened by the jury at its first general meeting, all the members being present.

(7) Neither the main plan nor any of the accompanying documents may be inscribed with a name or any mark whereby the competitor's identity may be disclosed, but only with a motto or sign. The name, title, and postal address may be given on a separate sheet of paper, sent in with the documents in a sealed cover inscribed with the same motto or sign.

(8) All the drawings should be executed on white paper and all the documents written in legible Roman characters in one of the Scandinavian languages, or in German, French, or English.

(9) The jury will meet for the first time, on being summoned by the harbor board, on the 15th of September, 1892, at latest; and must have finished their task within three weeks after that meeting. The meetings will be held in a room set apart for that purpose, to which only the jury and the persons called in by them in accordance with paragraph 2 have the right of entrance.

(10) Until the designs are finally adjudicated upon, they will be kept by the jury without coming under the cognizance of any other person during that time.

(11) The persons named in paragraph 2 may not be present at the jury's deliberations with regard to the distribution of prizes.

(12) On the completion of the adjudication, and after the jury have given their decision, with their reasons for it, as to the award of the prizes, and have also handed over the designs which have come to hand, together with the unopened inclosures containing the names, the latter will be opened before the harbor board, who will then promptly publish the jury's decision in Post- och Inrikes Tidningar, as well as in the newspaper Sydsvenska Dagbladet Snällposten, with a request to competitors who have gained a prize and whose names are not known to declare their identity.

(13) The successful designs become the property of the harbor board.

(14) Designs which come to hand after the time fixed in paragraph 5 will remain unopened until they are claimed by the person who can prove his right to them. The board will, however, not be responsible for them longer than to the end of the year 1892.

APPENDIX A.

The list of the prices of the most important materials entering into the construction of the harbor, and also of the rates of wages, which should form the basis of the estimates of expenses, are as follows:

Table showing the prices of the most important materials.

Materials.	Price.
Timber.	*Crowns.*
Oak balks, 3 to 5 meters:	
30 by 30 centimeters....per meter.	70.00
20 by 20 centimeters.....do...	50.00 to 60.00
Pine balks, 10.7 meters:	
30 by 35 centimeters.....each..	37.50
30 by 30 centimeters.....do...	30.00
25 by 25 centimeters.....do...	20.00
22.5 by 22.5 centimeters.....do..	15.00
20 by 20 centimeters.....do...	8.00
Pine rafters:	
6 to 10.7 meters, 17.5 by 20 centimeters.....each..	3.00 to 6.00
5 meters, 15 by 12.5 centimeters.....each..	1.25
Pine deals, 4.2 meters:	
7.5 by 22.5 centimeters...per doz..	22.00
6.2 by 22.5 centimeters.....do...	18.25
5 by 22.5 centimeters.....do...	14.50
Pine boards, 4.2 meters:	
3.7 by 22.5 centimeters.....do...	12.00
2.5 by 22.5 centimeters.....do...	7.00
Pine sleepers, 2.4 meters, 17 by 22.5 centimeters.....each..	1.50
Iron.	
Wrought flat bar and square bar.....	
.....per 100 kilos..	16.00
Other sorts.....do...	17.00 to 18.00
Plate, laminated.....do...	21.00
Chain, with short links:	
1.25 centimeters.....per meter..	2.35
1.85 centimeters.....do...	4.40
2.45 centimeters.....do...	7.50
Nails:	
For oak—	
20 centimeters.....per M.	35.00
17.5 centimeters.....do...	22.00
15 centimeters.....do...	18.00
12.5 centimeters.....do...	13.00
10 centimeters.....do...	6.00
8.7 centimeters.....do...	5.00
7.5 centimeters.....do...	3.00
6.2 centimeters.....do...	3.00
5 centimeters.....do...	2.00
Increase for galvanizing.....	
.....per kilo..	.20
For pine—	
17.5 centimeters.....per M..	12.50
15 centimeters.....do...	7.50
12.5 centimeters.....do...	5.00
10 centimeters.....do...	3.00
8.7 centimeters.....do...	3.00
7.5 centimeters.....do...	2.00
6.2 centimeters.....do...	1.60
5 centimeters..... do...	1.50
Increase for galvanizing.....	
.....per kilo..	.20

Materials.	Price.
Railway materials.	*Crowns.*
Rails, steel, 9.15 meters 10.5 centimeters (weight, 25 kilograms per meter).....per 100 kilos..	9.50
Fish plates (weight, 6.37 each)..do..	15.75
Fish bolts (weight, 0.5 each).....do...	16.50
Hook nails.....per M..	50.00
Gas, water, and drain pipes.	
Gas and water pipes (cast), jointing included, but work of excavation excluded:	
20 centimeters.....per meter..	8.30
15 centimeters.....do...	5.90
10 centimeters.....do...	3.30
7.5 centimeters.....do...	2.30
Drain pipes (salt-glazed stoneware pipes), jointing included, but work of excavation excluded, in lengths of 6 decimeters:	
7.5 centimeters.....each..	.35
10 centimeters.....do...	.45
12.5 centimeters.....do...	.60
15 centimeters.....do...	.70
17.5 centimeters.....do...	.85
22.5 centimeters.....do...	1.00
25 centimeters.....do...	1.30
30 centimeters.....do...	1.70
Granite, etc.	
Granite:	
Unhewn (bowlders)—	
Large.....per cubic meter..	5.00
Small.....do...	3.00
Hewn, for walls.....do...	60.50
Dressed:	
For carriage ways.....	
.....per square meter..	5.25
For footways.....do...	4.00
Curbstones, for footways, 13 centimeters broad..per meter..	3.50
Broken, for béton and macadamizing.....per cubic meter..	6.50
Brick:	
Building, first quality.....per M..	26.00
Fireproof.....do...	100.00
Cement.....per barrel of 180 kilos..	7.00
Lime.....per cubic meter..	20.00
Gravel, for béton and building...do...	1.60
Mooring posts:	
Iron.....each..	150.00
Hewn granite.....do...	50.00
Mooring rings.....do...	40.00
Coal.....per hectoliter..	1.60
Machinery oil.....per kilo..	.75
Tar.....per barrel of 1.2 hectoliters..	21.00
Coal tar.....per 170 kilos..	7.50
Wagon grease.....per 100 kilos..	17.00

Statement showing prices of labor.

	Crowns.
Dredging.....per cubic meter...	0.65
Discharging and leveling of the mud.....do.....	0.60 to .85
Rates of wages per day of 10 hours:	
Stonecutters, masons, smiths, carpenters, enginemen, and other workmen...	3.00
Navvies, etc:	
Piecework.....	2.50 to 3.00
By the day.....	1.75 to 2.00

APPENDIX B.

Table showing the shipping trade in Malmo as far as concerns vessels of more than 10 tons register.

Year.	Arrived.				Sailed.			
	Sailing vessels.		Steamers.		Sailing vessels.		Steamers.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Foreign trade.								
1860	431	32,741	658	21,280	384	26,747	632	20,335
1865	538	47,655	1,479	59,609	359	30,036	1,508	63,504
1870	745	63,995	1,180	104,400	509	34,399	1,230	103,777
1875	950	79,902	1,984	280,042	606	37,496	2,070	272,002
1880	709	70,340	2,180	332,353	451	26,416	2,268	319,204
1885	538	50,244	2,758	553,128	373	23,527	2,751	513,458
1890	555	66,287	3,236	644,186	299	17,175	3,212	577,982
Coasting trade.								
1860	790	30,350	139	14,679	840	35,970	138	14,598
1865	378	11,878	174	22,482	534	28,656	155	18,772
1870	277	9,709	242	37,393	432	29,070	165	34,610
1875	286	10,541	317	70,298	520	46,074	269	79,977
1880	406	12,936	453	103,597	635	51,616	311	115,889
1885	374	14,113	1,164	222,386	530	40,003	1,137	264,663
1890	447	16,768	1,113	241,551	712	62,178	1,090	308,680

Table showing the quantity of the most important commodities loaded and discharged in Malmo harbor during the years 1860–'90.

Articles.	1860.	1865.	1870.	1875.	1880.	1885.	1890.
Commodities imported from foreign ports.							
Butter.....tons...	15	3	3	84	55	134	282
Cement.....do.....	.....	.....	.....	133	233	165	417
Coal and coke.....do.....	28,299	41,984	52,551	86,278	116,825	132,428	178,904
Coffee.....do.....	407	395	455	494	614	1,048	1,163
Corn:							
Unground.....do.....	1	843	4,596	10,780	6,883	33,978	18,451
Ground.....do.....	91	261	478	2,322	2,709	1,396	346
Cotton.....do.....	704	.....	356	.....	434	353	625
Fish, all kinds.....do.....	1,604	821	563	1,303	1,037	1,370	1,806
Foods, cattle, artificial...do.....	5	.....	32	2,202	4,352	4,558	7,540
Hides and skins.....do.....	136	165	141	150	158	141	375
Implements and machines.....tons..	.....	.....	.....	614	538	1,481	2,072

Table showing the quantity of the most important commodities loaded and discharged in Malmo harbor during the years 1860–'90—Continued.

Articles.	1860.	1865.	1870.	1875.	1880.	1885.	1890.
Commodities imported from foreign ports—Continued.							
Iron:							
Pig, cast, wrought, and laminated.....tons...	510	3,040	488	1,912	3,076	4,748	3,374
Other kinds.....do.....	.....	.....	.....	588	383	158	295
Manures, artifical.....do.....	147	.....	381	1,873	3,068	2,456	4,200
Meal, other than corn meal.....tons...	165	178	304	295	741	965	739
Meat and bacon.....do.....	38	43	95	570	1,422	777	719
Oils:							
Mineral.....do.....	.....	35	27	650	412	948	2,342
Other kinds.....do.....	139	189	155	211	622	824	843
Paper.....do.....	10	33	18	.....	.....	.....	119
Salt.....do.....	987	2,189	3,577	2,187	2,811	3,190	3,416
Seed.....do.....	375	282	360	.....	.....	.....	1,454
Spices.....do.....	117	99	110	222	311	292	476
Spirits of all kinds and wine.....tons...	327	260	291	561	569	529	435
Sugar.....do.....	151	602	753	1,646	1,738	738	4,122
Sirup.....do.....	56	57	18	385	143	216	438
Textile fabrics.....do.....	85	112	181	355	546	630	408
Tobacco, unmanufactured.....tons...	249	230	292	359	588	398	224
Window glass.....do.....	131	96	351	.....	.....	.....	85
Wool.....do.....	55	70	10	88	97	342	431
Commodities exported to foreign ports.							
Butter.....tons...	3	74	224	923	2,066	4,212	4,084
Cattle:							
Horses.....number...	27	1,231	569	540	1,986	1,183	2,774
Horned.....do.....	99	3,384	4,869	11,702	17,222	13,538	19,432
Other kinds.....do.....	280	13,037	13,524	16,163	22,196	29,983	24,622
Cement.....tons...	.....	.....	.....	.....	.....	.....	3,513
Corn:							
Unground.....do.....	27,774	21,878	30,205	23,743	21,072	12,297	1,861
Ground.....do.....	11	261	792	.....	208	7,832	2,601
Eggs.....do.....	.....	.....	.....	1	.....	.....	236
Hides and skins.....do.....	29	84	198	239	270	251	449
Iron (pig, cast, wrought, and laminated).....tons...	83	79	125	.....	.....	.....	678
Matches.....do.....	.....	.....	.....	457	630	1,995	4,246
Meat and bacon.....do.....	6	381	7	259	51	1,171	2,470
Rags.....do.....	.....	155	189	228	539	272	328
Spanish white.....do.....	.....	.....	.....	.....	2,815	2,601	6,229
Timber.....cubic meters...	.....	.....	18,548	28,354	20,369	21,626	25,361
Wood pulp.....tons...	.....	.....	.....	.....	.....	.....	4,002
Commodities brought in from home ports.							
Bricks.....number...	1,126,492	659,346	510,498	1,447,184	1,986,000	6,288,427	3,155,624
Butter.....tons...	9	2	34	35	73	130	113
Cement.....do.....	.....	.....	.....	109	.....	7,281	13,240
Corn:							
Unground.....do.....	673	1,655	331	798	121	1,196	1,431
Ground.....do.....	4	4	49	11	2	43	95
Hides and skins.....do.....	8	17	21	39	37	66	209
Implements and machines.....tons...							326

Table showing the quantity of the most important commodities loaded and discharged in Malmo harbor during the years 1860–'90—Continued.

Articles.	1860.	1865.	1870.	1875.	1880.	1885.	1890.
Commodities brought in from home ports—Continued.							
Iron:							
Pig, cast, wrought, or laminated.....tons.....	1,913	963	850	471	511	687	810
Other kinds.....do.....	.....	.....	.....	535	427	479	472
Manures, artificial.....do.....	3	.....	.....	.....	.....	.....	1,966
Oils:							
Mineral.....do.....	.....	21	3	.....	.....	.....	40
Other kinds.....do.....	8	37	42	.....	94	47	155
Paper.....do.....	70	21	25	.....	236	246	431
Seed.....do.....	357	82	4	.....	.....	.....	.....
Textile fabrics.....do.....	57	16	13	21	48	108	224
Spirits of all kinds and wine.....tons...	25	72	82	.....	126	138	85
Soft soap.....do.....	8	75	190	146	166	152	237
Timber.....cubic meters...	.....	.....	7,907	8,718	9,017	12,546	4,660
Window glass.....tons...	14	45	80	.....	.....	.....	.....
Yarn.....do.....	28	37	10	.....	41	.....	176
Commodities dispatched to home ports.							
Cement.....tons...	.....	.....	.....	.....	2,141	3,498	7,541
Chalk powder.....do.....	1	13	.....	.....	3,684	2,867	4,073
Cheese.....do.....	71	46	23	.....	107	123	110
Chicory.....do.....	78	146	236	148	205	89	134
Corn:							
Unground.....do.....	3,698	6,805	1,350	1,134	1,249	93	4,696
Ground.....do.....	157	1,413	2,259	.....	1,789	7,956	9,115
Foods, cattle, artificial...do.....	.....	.....	96	143	.....	.....	364
Implements and machines.....tons...	.....	.....	.....	.....	.....	.....	217
Iron (pig, cast, wrought, or laminated).....tons...	193	116	117	.....	.....	.....	204
Meal, other than corn meal.....tons...	22	10	14	.....	.....	.....	164
Meat and bacon.....do.....	55	23	5	.....	193	161	337
Paper.....do.....	9	6	4	.....	.....	.....	151
Soap.....do.....	57	50	801	.....	226	217	197
Soft soap.....do.....	75	19	1	.....	137	135	455
Spirits of all kinds and wine.....tons...	1,518	1,351	541	849	1,029	901	498
Sugar.....do.....	16	35	51	69	260	923	2,629
Tobacco:							
Unmanufactured.....do.....	16	14	1	.....	.....	.....	.....
Manufactured.....do.....	91	61	72	106	116	86	72
Textile fabrics.....do.....	28	16	35	27	43	124	238
Wagon grease.....do.....	.....	.....	.....	.....	133	86	462
Window glass.....do.....	8	4	7	.....	.....	.....	102

WAGES IN NICARAGUA.

REPORT BY CONSUL NEWELL, OF MANAGUA.

The following is a statement of the wages received by the different classes of labor in Nicaragua. It also shows the salaries paid by this Government to those employed in the railroad, telegraphic, and steamer service. The amounts are stated in the coin of this country, the dollar of which is 85 cents American:

Description.	Wages.	Description.	Wages.
Clerks, mercantile:		Railway service—Continued.	
Natives.....per month..	$20.00 to $40.00	Station master—	
Foreigners.....do...	50.00 to 150.00	Granada.....per month..	$55.00
Stone masons.....per day..	1.50 to 2.00	Central station.....do...	50.00
Carpenters.....do...	1.00 to 2.00	Sabana Grande.....do...	40.00
Ordinary laborers.....do...	.40 to .80	Campuzano.....do...	40.00
Furniture-makers.....do...	1.50 to 2.00	Nindiri.....do...	30.00
Journeymen tailors.....do...	.80 to 2.00	Masaya.....do...	70.00
Cartmen.....do...	.40 to .80	San Blas.....do...	30.00
Machinists.....do...	3.00 to 5.00	Master mechanic.....do...	200.00
Cooks.....per month..	6.00 to 14.00	Foreman, machine shop..do...	150.00
Blacksmiths.....per day..	1.00 to 3.00	Founder.....do...	115.00
Shoemakers.....do...	1.00 to 2.00	Timekeeper.....do...	50.00
Farm hands.....do...	.40 to .80	Telegraph service:	
Tile roofers.....do...	1.50 to 2.00	Operators.....do...	$60.00 to 125.00
Wagon-makers.....do...	1.00 to 2.00	Linemen.....do...	18.00 to 19.00
Railway service:		Steamer service:	
Auditor.....per month..	80.00	Captain—	
General superintendent....do...	200.00	Steamers Managua and Angela.....per month..	100.00
Private secretary.....do...	100.00	Steamer Progreso.....do...	80.00
Traffic manager—		Steamer Amelia.....do...	60.00
Eastern section.....do...	130.00	Steamer Isabel.....do...	60.00
Western section.....do...	150.00	Superintendent of steamers.....per month..	100.00
Secretary.....do...	45.00	Master mechanic of steamers.....per month..	300.00
Assistant auditor.....do...	60.00	Wharf master—	
Telegraph operator, superintendent's office...per month..	25.00	At Managua.....do...	60.00
Storekeeper.....do...	35.00	At Granada.....do...	50.00
Road master.....do...	125.00	Engineers, railway and steamers.....per month..	110.00
Bridge inspector.....do...	60.00	Firemen.....per day..	1.40
Conductor.....do...	60.00	Brakemen.....do...	.80
Machinists.....do...	110.00		
Collector and paymaster...do...	60.00		
Inspector of cars.....do...	55.00		
Ticket agent.....do...	30.00		

The coffee-pickers are paid by the task—about 40 pounds of green berries for 10 cents.

WILLIAM NEWELL,
Consul.

UNITED STATES CONSULATE,
Managua, December 20, 1891.

ORCHILLA WEED IN MADEIRA.

REPORT BY CONSUL HEALY, OF FUNCHAL.

Replying to the Department's dispatch of December 5, 1891, instructing me to inquire into, and make a report on, the orchilla weed, its mode of culture, etc., I have the honor to report the following information,* received from Alexander F. Camacho, esq., of Rua Mascraria, of this city, who owns a vast quantity of the orchilla weed. Mr. Camacho is the owner of the group of islands commonly known as the "Desertas," which are situated and described as follows: The main or largest one of the group, called the "Deserta," lies 22½ miles southeast of this city, is 9 miles long, about 1½ miles wide, 1,600 feet high, and extends from north to south; "Bugio" Island, south of the above and close to it, is 4 miles long, three-fourths of a mile wide, and 1,300 feet high; "Chão" Island (flat island) lies east of the north end of the "Deserta," is 1 mile in length, three-fourths of a mile wide, and 325 feet in height.

The orchilla weed is not planted nor cultivated; it grows on rocky cliffs. Mr. Camacho has been engaged in preparing and shipping it for many years to France and England and says that on the Desertas he can gather at least 15 tons annually, and with what he can get from the north side of this island (Madeira), together with what he can procure in Porto Santo, he can supply 20 tons annually. The mode of gathering and preparing is in this manner: The weed is cut close to the ground, tied in bundles, carried to outbuildings, spread on floors to dry, and then packed in large, coarse sacks and shipped and sold at $1.80 for 15 kilograms, which will amount to about $5.50 per 100 pounds, or, in other words, about $110 per ton. He says that he has sold at higher prices and at lower, but the above would be the average price.

As to parties who may control what grows on the north side of this island, I am not able to state without going there. The same may be said about Porto Santo. I can not tell who the parties are who control the weed, and certainly could not without going there. A boat goes from here twice a month. Mr. Camacho is anxious to open a correspondence with responsible parties in the United States who wish to deal with him. He gathers this weed three times a year, viz, February, June, and August.

Some years ago Mr. Camacho shipped largely to New York of another weed from his Desertas used in making soap. He thinks if he enters into

*A New York chemist, in requesting the Department to secure information relative to the growth and supply of orchilla, writes as follows: "I wish to know where I may obtain orchilla weed, used in making extracts of archil and cudbear (dyestuffs). Some twenty years ago I manufactured those dyestuffs, but was compelled to stop on account of the tariff being taken off and foreign manufacturers flooding the market with their products; but I think now it may be manufactured with profit in the United States, as there is no one making it on this continent. I have tried to obtain the weed in the United States, but am informed it is nearly ten years since any of it passed through this country en route for Europe." Consuls resident in districts where the weed is supposed to grow were written to, but this is the only satisfactory response received thus far.

correspondence in relation to the orchilla weed that he can be able to open a market for the weed used in the soap trade, which grows largely on his islands, besides many other plants which are used extensively by chemists.

JOHN F. HEALY,
Consul.

UNITED STATES CONSULATE,
Funchal, January 1, 1892.

FOREIGNERS RESIDENT IN FRANCE.

REPORT BY CONSUL BOWEN, OF BARCELONA.

The number of foreigners resident in France is 1,200,000, or 3 per cent of the entire population. About as many more comprise the floating population. Of those that reside there 482,000 are Belgians, 264,000 Italians, 100,000 Germans, 79,000 Spaniards, 78,000 Swiss, 37,000 Dutch, 36,000 English, and 10,000 Americans (South and North). In Paris there are 14,000 English, 6,000 Americans (South and North), and 3,000 Spaniards. The number of French residents in Spain is 18,000, of which the greater part are in Catalonia.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, October 7, 1891.

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REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 138.—MARCH, 1892.

ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE.
ALL REQUESTS FOR THESE REPORTS SHOULD BE ADDRESSED TO THE SECRETARY OF STATE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 138.—MARCH, 1892.

TRADE AND FINANCES OF THE ARGENTINE REPUBLIC.

REPORT BY CONSUL BAKER, OF BUENOS AYRES.

My last annual report left the Argentine Republic in the meshes of an unrelenting crisis. President Juarez Celman, under whose administration the finances of the country had been sadly mismanaged, its revenues misapplied, and its resources exhausted, had been by popular clamor compelled to resign; and Dr. Pellegrini, the Vice-President, with a cabinet of conservative men, had assumed the executive office under the most flattering auspices. So general and so great was the confidence which the new Government inspired, it was assumed even in high financial circles that there would be a speedy rebound from the depression, and that the Argentine Republic, whose march had been thus temporarily interrupted, would once more move forward on the high road to more prosperous days. It can not be said that I was among those who entertained any such rose-colored views of the situation. I looked upon the crisis as the outcome of blunders of finance, blunders of political economy, and blunders of government which were not superficial, but permeated and affected the whole body politic, and that in the nature of things the remedy must be something more than a mere change of administration; that there could be no permanent improvement in the situation until the causes which had produced it were removed; that the disease was radical and could not be cured by palliatives; and that the liquidation, which was then inevitable, must be allowed to go on to the end before there could be any permanent change for the better in the condition of the country.

RETROSPECT OF 1891.

The failure of the great London house of Baring Brothers & Co., the financial agents of the Argentine Republic, which occurred just at the close of the year, seemed to me, however, as "the beginning of the end." I

assumed, as a matter of course, that the firm, carrying as it did an overload of Argentine bonded indebtedness which it had not been able to place and on which it was unable to realize except at a ruinous depreciation, would at once go into liquidation as a bankrupt concern; and I expressed the opinion that, "grevious as was the remedy, it would ease up the strain upon the Argentine Government and let the nation gradually down from the inflated air castle in which it had been holding high carnival to the safer level of business on a gold basis." Unfortunately for the Argentine Republic, this was not allowed to be. The house of the Rothschilds and the Bank of England, assisted by other monetary centers, with an amount of benevolence which savored more of rashness than of ordinary banking discretion, rushed with their guaranties to save the falling house; and the result promises to be not only a stinging loss to the generators themselves, but an ill-considered staving off in the Republic of the day of ultimate and inevitable liquidation. It would have been far better for the country if the law in the case of the discredited house had been permitted to take its course. But, in a different spirit from that which actuated the Rothschilds and the Bank of England in the matter, the Argentine Government, naturally anxious to save its credit, jumped at the bait of a three years' *moritorium*, or staving off of pay day, in consideration of a new loan for $75,000,000 at 6 per cent interest, guarantied by a lien on the Argentine custom-house receipts, by the terms of which the Argentine Government was to receive no money, but the bonds were to be devoted to the payment of the interest on the previous outstanding indebtedness for the years 1891–'93.

This unique arrangement, by which, at a great depreciation upon their face value, the Argentine Government was permitted to pay in bonds the interest upon interest which had not yet accrued, was consummated by a vote of the Argentine Congress on the 26th of last January, and for a few days there was great satisfaction manifested over the event; but it was soon discovered that the method of paying one debt by contracting another was rather a fictitious solution of the financial troubles of the country, and a very decided reaction set in against the whole business, especially when the gold premium, which, it was confidently predicted by the London bankers, would at once suffer a collapse, took another and stronger movement upward. I need hardly say that no good has come, nor probably will come, from this arrangement.

Señor Torre Diaz, well known in financial circles both here and in London, has recently written a letter to the London Times in regard to this *moritorium* loan which exposes quite effectually the true inwardness of the business. It reads as follows:

LONDON, *August 25, 1891.*

SIR: No one but those quite behind the scenes knows probably the exact position of affairs when the memorable syndicate of Barings' guarantors was formed, but I think a shrewd guess may be made at it. The bulk of the banks and financial institutions in London held more of Barings' paper than they could meet without absorbing their supposed cash reserves, and possibly calling on the reserve liability of their shareholders. The supposed cash reserves

were in the Bank of England, who, without giving any consideration for the use of the money, had locked them up and could not have met the demand of its customers for the money, which, by a figure of speech, was styled "cash at the Bank of England." Under these circumstances these gentlemen put their heads together to carry on Messrs. Baring's business. Now, if they thought this better than facing the loss they had made through Barings, well and good; but, instead of simply acquiring all the assets in consideration of taking over all the liabilities and realizing the former as best they could, it seems to me they have taken the assets and have succeeded in turning one and are endeavoring to turn another of the worst of them into quite different securities, such as can be realized.

Possibly before many months it may be seen that it would have been better to let Messrs. Baring fail in the ordinary way, and for each one to bear the burden he had assumed and pay the penalty of his own errors.

At the moment everyone lost his head, and the only desire was that Messrs. Baring should not be said to have failed, and no one cared how that end was arrived at. Of course, practically, Messrs. Baring did fail, and the guarantors should stand in their shoes. This position they do not frankly recognize, but endeavor to occupy something betwixt and between, and work with both debtor and creditor, and so far they seem to have been tolerably successful for themselves.

I remain, etc.,

TORRE DIAZ.

The bonds, national and provincial, of the Argentine Republic held by the house of Baring Brothers & Co. are still a stumbling block in the way of a settlement of their liabilities, inasmuch as, having been inventoried at high figures, these securities, discredited by the postponement of their interest, have suffered a still further depreciation in value, with no present prospect of their being unloaded on the British public; while the Argentine Republic, on account of the general collapse of business and the consequent reduction of its revenues, is not only in no better condition financially than it was a year ago, but almost before the rejoicings over the loan were at an end it found itself so short of ways and means to meet the ordinary expenses of the Government that it was under the necessity of obtaining assistance to the extent of several millions of dollars from the foreign banking establishments of Buenos Ayres, the Government banks being in no condition to respond to its requirements.

GOVERNMENT BANKS AND THE PATRIOTIC LOAN.

At once the alarm was given that the National Bank and the Bank of the Province of Buenos Ayres, the two great moneyed institutions of the country, were in distress—the first with a capital of $40,000,000 and the other of $32,000,000, and each with deposits amounting respectively to double those sums. An incipient run was commenced upon them by anxious depositors; and, as they were unable to meet any continued drain, they applied to the Government for assistance. The President, appreciating the situation, called a meeting of the members of the Buenos Ayres Exchange, suggesting two alternatives to tide over the trouble—either to make another issue of paper for $100,000,000 in national money or to effect a home loan for that amount. Fearing that utter ruin would be the result of any further watering of the currency, the Bolsa committee decided in favor of an immediate "patriotic

loan," the Government providing a week of bank holidays, within which it was hoped the subscriptions would be arranged and the banks in question secure a fund out of which to meet the demands of their depositors. By extraordinary efforts, the foreign banks doing the most of the subscribing and the wealthy native houses very little of it, about forty millions were thus secured; and the National Government issued its bonds for the same at the rate of 75 cents to the dollar, the interest being 6 per cent and the amortization 2 per cent per annum. This money was turned over to the banks, the Government receiving their duebills for the same, secured by the overdue and protested paper held by the banks. Thus reënforced, the banks opened their doors again; but meanwhile the people had lost all remaining confidence in their ability to pay, and such a run was made upon them that they found it impossible to respond. On the 8th of April the President issued a decree practically closing their doors to their depositors until Congress should meet and decide their status and meanwhile assured the public that the National Government would guaranty the ultimate payment of their deposits. When Congress came together on the 6th of May, one of its first acts was to give the Provincial Bank five years' *moritorium* in the payment of depositors, while the National Bank was merged with a new banking scheme called the "Bank of the Argentine Nation," with an unguarantied circulation of $50,000,000 in depreciated currency.

DISTRESS OF THE PRIVATE BANKS.

The closing of these banks naturally created a very uneasy feeling among those having deposits in the other banking institutions of Buenos Ayres. On the 1st of June these misgivings assumed the proportions of a panic. A run on the private banks ensued, and for three days the streets in the vicinity were filled with a surging mass of excited people, which an increased police force was scarcely able to control, while crowds of small and large depositors alike swarmed through the banks in their anxiety to draw their balances. Five of these banks, comprising the Bank of Italy and the River Plate, the New Italian Bank, the French Bank of the River Plate, the Spanish Bank of the River Plate, and the Commercial Bank, all well-accredited institutions of large capital, after paying out millions of currency, finally succumbed to the inevitable and closed their doors. The total amount withdrawn from the various banks during the run was roughly stated to be $65,000,000 Argentine currency. The several English banks located here were so well prepared that they withstood the pressure, and when the panic finally subsided their doors still remained open, though a short time after the English Bank of the River Plate, owing to a series of unfortunate breaks on the part of the London house, was compelled to stop business and go into liquidation. The effect of all these misfortunes following each other in such quick succession, whereby deposits were either locked up or banks were drained of their facilities for discounts, was such that it was impossible to do business; and the National Congress, in sympathy with the situation, on the 22d of June enacted a "stay law," or *moritorium*, to all classes of debtors for a period of

ninety days. President Pellegrini, in the interest of honesty and commercial integrity, promptly vetoed the measure on the ground that it was not only unconstitutional, but was a violation of good faith and the laws of trade; but both houses passed the measure by a two-thirds vote over the executive veto. Although foreign merchants generally, through fear of losing caste and credit, refused to avail themselves of the provisions of the law, yet its effect was to still further embarrass operations in almost every department of trade and commerce. The law expired by limitation on the 30th of September, and there has since been a feeble business reaction in exports; but the general depression continues to pervade all classes of the community and nearly all the great interests of the country. I will not say that the condition of affairs has reached a feeling of hopelessness; but, on the lines on which the Government is moving, those who are anxiously watching the situation see only dim prospects of improvement. A year ago there was a general paralysis of credit; there is now almost universal distrust—not only a distrust among business men, but a distrust of the Government itself.

EMBARRASSMENTS OF THE GOVERNMENT.

The mistake of the people, perhaps, was in expecting too much from the new Government. If it had come into power with materials with which to rebuild the fallen fabric of Argentine credit there might be more reason for holding it responsible for the present utter prostration; but the Juarez Celman junta, when compelled to retire from office, left nothing behind them but mountains of debt and protested promises. They had made a clean haul of the assets of the National Bank, of the National Mortgage Bank, and even of the national treasury. The orange had been sucked dry in every department of the Government. The national exchequer was absolutely empty, and President Pellegrini entered upon his office without the means to meet even current expenses. If the Government was thus compelled to borrow or temporarily water the currency, it was perhaps excusable as an act of self-preservation. It simply did what the extraordinary circumstances of the case immediately required. After that, however, there was a hope and expectation that measures would be initiated to reduce the volume of the currency and bring the country back from its wild and reckless policy of inflation to a safe and reliable specie basis, even though the consequent liquidation should be harsh and might financially hurt somebody. But it would seem that the new Government, along with a large majority of the National Congress, had too many friends who had been caught by the crisis and who were anxious to stave off the day of settlement. These and other causes have thus far defeated or postponed all measures looking to the restoration of trade and finance to a healthy condition.

Other reasonable expectations have also failed. It was assumed, when the new Government had diligently unearthed and exposed to the world the fearful amount of official malfeasance, swindling, and downright robbery by which the nation had been so shamelessly plucked, that legal measures would

be taken to save what could be saved and to punish the guilty parties who continued to parade themselves in public; but it is a remarkable fact—and a very strange one to the eyes of outsiders—that not the first move has yet been made in that direction. Nobody has been prosecuted, and probably will not be, and nobody seems to think the worse of anybody for his share in the general wreckage.

POLITICAL CONDITION OF THE COUNTRY.

In the midst of this troublous condition of affairs, however, the country during the year has been remarkably free from political uprisings and demonstrations, albeit there has been not only here in Buenos Ayres, but all through the interior provinces, a strong and very unrelenting opposition to the party in power. In Cordoba there was an attempted revolution in May last, in the course of which a number of persons were killed. This was followed by a similar demonstration in Paraná, the capital of Entre Rios, and there were *emeutes* in Mendoza and Corrientes in which a number lost their lives, while in Buenos Ayres, owing to threatened disturbances, the city was for a time placed under martial law. The Government troops have everywhere, however, been too strong for disorganized bodies of men, and they have had no difficulty in suppressing political disorders. There has been for several months and is now a very uneasy feeling, and rumors of a revolutionary character are whispered in undertone, owing to the bitter animosities which the two parties, in view of the pending presidential election, manifest towards each other; but the better advised do not apprehend an open strife.

ARGENTINE FOREIGN RELATIONS.

Under these circumstances it is fortunate for the country that its relations with other governments have continued to be of a satisfactory character. The report of Dr. Costa, the minister of foreign affairs, is in this respect most reassuring. Owing to the crisis, and from motives of economy, the Argentine Government has for the present suppressed its legations at Vienna, Berne, Brussels, Lisbon, and Mexico, as also all the agencies it had in other countries for the promotion of immigration; thus for the year 1890 reducing the expenses of the foreign office from $2,500,000 to $1,150,000, while for the present year the expenses will be less than $1,000,000 for the entire foreign service.

There were some complications with Chile during the recent revolution in that country, owing to the passage of Chilean troops over Argentine territory and the fitting out of war vessels in this port, but they have either been adjusted or they have ceased to be of importance by the success of the revolutionists.

The minister further states that a final treaty has been definitely concluded between Brazil and the Argentine Republic settling all points in regard to the Missiones boundary question, which has been an issue between the two countries during the last two hundred years; but later intelligence has just

been received here that the Brazilian Senate has refused to ratify the convention. The dispute will now probably take the course heretofore marked out for it and be referred to the President of the United States for his good offices as arbitrator.

The treaty of limits which was heretofore arranged with Bolivia has been ratified by the Congress of that country, and it is presumed that the Argentine Congress will at its present session proceed to do likewise.

Commissioners were appointed in 1889 to mark the frontiers to Chile and the Argentine Republic, and they met for the purpose on the 21st of April, 1890, but the Chilean revolution intervened and prevented further proceedings in the matter. The work, however, will at once be resumed.

IMMIGRATION.

The immigration bureau is now also under the charge of the minister of foreign relations, and he reports that the number of immigrants arriving in the Argentine Republic during the year 1890 was 138,407, against 289,014 in 1889. There were 82,981 immigrants who left the country in 1890, against 40,649 who went away in 1889; so that the net increase of population by immigration in 1889 was 248,365, and in 1890 it was 55,426. Of the arrivals in 1890 the number of assisted passengers was 20,121, but all assistance from the Government was suspended in May last. The scheme of paying the passages of immigrants was inaugurated in 1888. The total number which came to the country in this manner during the last four years was 134,081. The total amount thus expended by the Government was $5,600,000 in gold, a sum altogether out of proportion to the value of the European paupers who were thus in too many cases foisted upon this country. The report contains tables from 1857 to 1890, inclusive, showing that the arrivals for thirty-five years were 1,683,677 and the departures 413,403, leaving a net gain of 1,270,272; and of these 60 per cent were Italians. It is believed that fully 25 per cent of the population of the Argentine Republic at the present time consists of European settlers, most of whom—now that the undesirable ones have been compelled to leave—are well established and have all their interests identified with the country.

IMMIGRANT EXPATRIATION.

It continues to be a singular fact, however, that none of these immigrants ever become naturalized, although the law exempts them from military duty for ten years thereafter. They not only assert themselves as citizens or subjects of the nation in which they were born, but the legislation of the nations which thus contribute to increase the population of the Argentine Republic is based, so far as citizenship and naturalization are concerned, on a principle in diametrical opposition to that which is laid down by the Argentine law, that is to say, by the code of the Argentine Republic all persons born in the country, whether their parents are natives or foreigners, are declared to be Argentines, while, by the laws of Italy, Spain, and France, for instance, the children of all Italians, Spaniards, and French are claimed to be Italians,

Spaniards, and French, although they are born here in the Argentine Republic. The minister of foreign affairs, in his last report, calls attention to this conflict of laws, and states that, owing to the large and increasing number of children born in this country of foreign parents, the question may very readily be the cause of complications. Indeed, it appears that already such children, upon returning to the land of their parents, have been claimed as owing military duty to those nations, respectively. Under these circumstances, the minister thinks, it is time that this doubt and uncertainty in regard to the law of nations should be settled, and he suggests that an international convention be convened for that purpose. As our own law also claims the citizenship of "children born out of the limits and jurisdiction of the United States whose fathers at the time of their birth were citizens thereof," it may be that we likewise are interested in the solution of the question.

PROGRESS OF AGRICULTURE.

I expressed the fear in my last annual report, owing to the large number of departures of new immigrants from the country, that the agricultural industry would materially suffer. In this respect it appears that I have been happily disappointed. The exodus does not seem to have included those who, with their families, came here to open new farms and make their future homes in the country, but only those who had no visible means of subsistence when they arrived or when they left. So, far from being unfavorably affected, as the immigrants of the last two years were in great part agriculturists, the breadth of land put down in crops is larger this year than ever before. Indeed, the agricultural industry of the Argentine Republic is getting to be a factor in the world's annual supply of breadstuffs. In 1875 there were only 825,492 acres in cereal cultivation, of which 520,832 acres were in wheat and corn; in 1889 it had increased to 5,899,895 acres, of which 1,885,000 acres were in wheat and corn. Since then it is safe to say that 750,000 acres additional have been added to the grain fields, of which not less than 500,000 acres are in wheat and corn; thus at present making a total of 6,649,895 acres under cultivation, of which 2,385,000 acres are in wheat and corn. To show at a glance the progress of agriculture here I have compiled the following table, which gives the annual shipments of breadstuffs from the Argentine Republic, good harvests with bad, for the last ten years:

Year.	Wheat.	Corn.	Flour.
	Tons.	*Tons.*	*Tons.*
1881	160	25,000	.....
1882	1,700	107,000	.....
1883	61,000	19,000	.....
1884	108,499	113,710	3,734
1885	78,493	197,859	7,447
1886	37,864	231,660	5,262
1887	257,865	361,844	5,442
1888	178,928	162,037	6,392
1889	22,806	432,590	3,360
1890	327,894	707,281	12,017

The coming harvest.—In regard to the coming harvest, it is impossible yet to predict with certainty. The agricultural department states that "the area in wheat is far in excess of what it ever was before, whole *partidos* (counties) in the province of Buenos Ayres having been plowed for that crop." Unfortunately, the locusts, that bane of Argentine farming, have already appeared in some parts of the province of Santa Fé, but thus far very little damage has been done. The estimated yield for this year's harvest is put down at 1,250,000 tons of wheat and 2,000,000 tons of corn, and there will be about one-half of the former and two-thirds of the latter for export.

Other Argentine crops.—The development, however, of the agricultural industry is not confined to breadstuffs. There are other crops which now figure quite conspicuously in the table of exports. The following figures group the most important of these for the year 1890:

Articles.	Quantity.	Articles.	Quantity.
	Tons.		*Tons.*
Canary and turnip seed	830	Baled hay	19,120
Peanuts	289	Barley	1,308
Potatoes	871	Linseed	30,720

The total value of the agricultural exports for 1889 was $16,935,547; for 1890 it was $25,591,401, an increase of $8,655,854. If the coming crops respond to their present promise, the next harvest will show a still further increase in the figures.

FROZEN MEAT.

The frozen-mutton industry continues to develop under the 5 per cent guaranty of the Government. As a matter of interest to those at home engaged in the same business, I repeat the table of exports of congealed sheep carcasses since the commencement of the business in 1885:

Year.	Quantity.	Value.
	Tons.	
1885	2,860	$75,323
1886	7,350	360,508
1887	12,038	963,112
1888	18,027	1,498,182
1889	17,489	1,399,276
1890	20,413	1,633,105

From the published reports of the different establishments engaged in this business it would appear that there have thus far been no great profits—none commensurate at least with the amount of money invested in it. There are now several very complete plants in this vicinity, all of which, I believe, are owned in England, to which country nearly all the product is shipped.

CANNED MEATS.

Within the last year or so the business of preparing and canning meats for export has been established here and promises the very best results. The

largest and most important of these establishments is that of the Highland Scot Canning Company (limited), located on the Buenos Ayres and Ensenada Railway, about 30 miles from here. It occupies 365 acres of land and employs 1,400 workmen. All its departments, from the killing to the cooking, are most complete. The factory can dispose of 1,500 cattle, 3,000 sheep, and 500 hogs daily. Almost everything is done by machinery, and even the tins are made on the premises. Its principal manufactures are boiled beef, roast beef, corned beef, compressed corned beef, extract of meat, roast mutton, boiled mutton, sheep's tongues, ox tongues, lunch tongues, soups, stewed kidneys, marrow, margarine, butter, jerked beef, compressed oils, guano, bones, etc. The establishment is lighted by electricity, and the work goes on night and day. In the busy season from 35,000 to 40,000 cans are dispatched daily The whole plant has involved the expenditure of several millions of dollars.

CATTLE INDUSTRY.

Though the cattle industry continues to be the great interest of the Argentine Republic, it seems to have attained its development. At all events, unless it shows a speedy change for the better, it will soon have to take the second place in the table of exports. In most items the custom-house returns for 1890 do not show any great change compared with the year previous, but in sheepskins and wool there is a very marked reduction. I give the following comparative figures:

Articles.	1889.	1890.
Ox horns.....tons...	1,756	2,289
Horsehair.....do.....	1,794	2,324
Skins:		
Goat.....do.....	1,045	1,462
Kid..... do.....	369	502
Sheep.....do.....	36,378	27,148
Hides:		
Cow—		
Dry.....number...	2,424,596	3,053,649
Salted.....do.....	996,177	1,294,109
Horse—		
Dry.....do.....	40,358	57,716
Salted.....do.....	156,616	173,161
Hide cuttings.....tons...	1,488	1,882
Jerked beef.....do.....	41,767	43,481
Grease and tallow.....do.....	18,319	17,361
Wool, unwashed.....do.....	141,774	118,405

It will be seen that wool, which is the principal article of Argentine product, shows a falling off of 23,369 tons, or 46,728,000 pounds, while the shipments of sheepskins are 9,230 tons less than it was in 1889. It is this great falling off in wool shipments which so greatly affects the export tables. Whereas in 1889 the value of the wool exports was $56,709,774, in 1890 it was only $35,521,681, a difference of $21,187,093. Wool merchants, however, predict that this year's clip will show a large increase over the figures of 1890.

LIVE-STOCK EXPORTS.

The live-stock export trade has been unusually active during the last year, and within the last six months an increased number of steamship lines have made arrangements for the shipment of cattle, sheep, and horses to European markets. I have as yet no returns of the number thus exported, but I take from the custom-house statistics the following table showing the progress of the trade during the five years ended on the 31st of December last:

Animals.	1886.	1887.	1888.	1889.	1890.
	Number.	*Number.*	*Number.*	*Number.*	*Number.*
Asses	8,581	6,200	9,632	8,821	6,793
Horses	3,630	3,419	6,047	5,961	29,052
Sheep	26,751	29,413	22,616	19,526	50,002
Mules	8,895	6,445	6,893	12,104	11,755
Horned cattle	128,405	70,707	94,726	136,937	150,003

Bolivia receives the asses exported from this country. Nearly all the horses go to Brazil, though a few have recently been sent to England to try the market there. The live muttons are mostly sent to England and France. The mules go to Chile and Bolivia, while the horned cattle were shipped to Chile and Uruguay. The trouble with shipments to European ports is to find cattle which are in proper condition to make the voyage, as only alfalfa or grain fed animals will reach the end of the long journey in marketable form. Otherwise, it has been found that on good steamers and with proper attendance at sea they can be carried from the Plate with as little risk as from North American or Canadian ports.

SUGAR INDUSTRY.

The sugar industry of the country, situated exclusively in the extreme northern provinces and the territory of the Chaco, likewise continues to show great expansion in spite of the crisis. The most important seat of this industry is the city of Tucuman, in the neighborhood of which there are at present no less than thirty-five factories, all with the most approved machinery, and which during the season work day and night. This year it is estimated that it will require 20,000 men to elaborate the crop of sugar cane.

In 1889 there were 13,700 hectares (34,250 acres) in sugar-cane plantations; for the present year there are 17,000 hectares (42,500 acres). As each hectare produces an average of 50 kilograms of cane, it follows that the total yield of cane this year will be 850,000 tons, against 685,000 tons in 1889. The production of sugar in 1889 was 35,000 tons, valued at $10,500,000; this year, according to the estimates of experts, it will not be less than 45,000 tons, valued at $27,000,000. Besides this, in 1889 there were produced 8,155,424 liters of alcohol, valued at $1,639,084; this year it is estimated that the alcohol product will be $4,250,000; thus making the total value of the sugar-cane product this year $31,250,000 in Argentine

currency, against $12,139,080 in 1889, in the province of Tucuman alone. The product of sugar and alcohol in the provinces of Salta, Santiago, and Jujuy, and the territory of the Chaco will probably add a third more to the above figures. At this rate it would seem that the country will soon be in a condition to produce sugar enough to supply the home demand, which probably now reaches to 75,000 tons yearly.

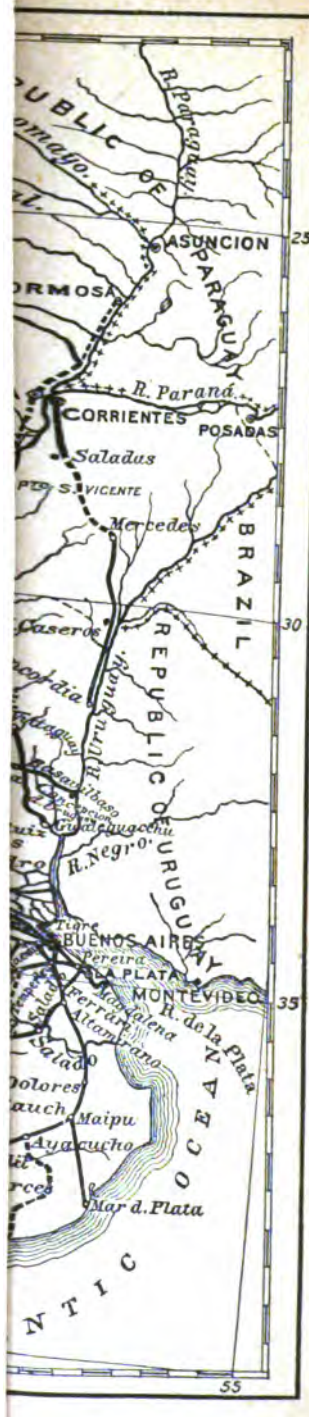
ARGENTINE WINE PRODUCT.

I have also to refer to wine-growing, which, from small beginnings, has now become one of the firmly established industries of the Argentine Republic. There is hardly any part of the country which will not produce good grapes; but, owing to the peculiar flavor which the climate and the soil of the Cuyo provinces give to the wine, the favored seat of this industry is in the neighborhood of Mendoza, San Juan, Rioja, and Catamarca. Mendoza has at present 25,000 acres under vines, and the other provinces named have probably half as many each. Each acre of full-grown vines produces 6 tons of grapes if they be French and 8 tons if they be Argentine, and a ton of grapes produces an average of 600 liters, or 130 gallons, of wine. Great progress has been made in all these provinces in late years in the appliances necessary to the production of merchantable wines. Extensive *bodegas*, or cellars, have been built and equipped in the most approved style, with capacity each for from 2,000 to 5,000 *bordalesas*, or butts. I have no statistics of the amount now produced in the country; but Argentine wines have a steady demand in this market on account of their purity and fine aroma, and there is a growing call for them on European account. Last year 10,685 liters were exported, and double that amount will be shipped this year.

HARBOR WORKS OF BUENOS AYRES.

Owing to the condition of the public treasury, there has been a general suspension of work on all the public buildings and works heretofore ordered by the Government. About the only exception has been the city port. This has been prosecuted during the last year, but with a greatly reduced force. There are now opened to commerce the southern basin and docks Nos. 1 and 2. Dock No. 3 will be ready for opening before the end of the year, thus leaving dock No. 4 and the northern basin still unfinished. The total amount expended to the 1st of March last on these works, with commissions and interest, was $16,481,419. The present Congress has just appropriated $900,000 more to continue the work during the coming year.

I have heretofore referred to the bar at the island of Martin Garcia, in the River Plate, which very seriously obstructs the navigation of the Paraná and Uruguay rivers, hundreds of vessels sometimes being kept there for days, unable, on account of the low water, to get over the shoal. The present session of the Argentine Congress has appropriated $300,000 to dredge a channel across the obstruction. The work is one of national importance.


R. Paraguay
ASUNCION
25
R. Paraná
CORRIENTES
POSADAS
Saladas
S. VICENTE
Mercedes
BRAZIL
30
Caseros
REPUBLIC OF URUGUAY
R. Negro
BUENOS AIRES
LA PLATA
MONTEVIDEO
35
R. de la Plata
Maipu
Ayacucho
Mar d. Plata
55

RAILWAYS OF THE ARGENTINE REPUBLIC.

While the crisis has greatly interfered with the building of projected railways and stopped work on most of those which are in process of construction, yet it appears from the report of the board of national railway direction that there was, after all, no inconsiderable amount of track-laying last year. At the end of 1889 the railway service of the country amounted to 8,113 kilometers, or 5,030 miles; at the end of 1890 it amounted to 9,254 kilometers, or 5,737 miles, thus showing that during the year over 700 miles of new railway were opened to traffic. From the above report I compile the following table, which gives the mileage, the capital, the gross receipts, and the net earnings of all the different railways of the Argentine Republic:

Railroads.	Length.	Capital.	Gross receipts.	Net profit.
	Kilometers.			
Buenos Ayres and Rosario and extensions	1,191	$41,960,000	$7,314,379	$3,059,211
Buenos Ayres and Southern	1,352	54,440,000	5,726,582	3,020,209
Northern Central	884	21,000,000	3,160,657	592,400
Cordoba branch	210	5,040,000	667,447	339,543
Prolongation	226	10,000,000	415,574	.....
Buenos Ayres to the Pacific	685	16,718,385	2,623,779	337,149
Buenos Ayres and Western	544	47,655,111	8,130,735	3,547,456
Branches	478	16,596,987	639,531	277,250
Central Argentine and branches	697	34,020,000	3,671,930	1,457,676
Province of Santa Fé	815	10,000,000	2,034,711	431,753
Argentine Great Western	513	19,504,800	1,872,656	.....
Central Entre Rios	287	.....	431,947	10,457
Andine	254	4,373,707	460,360	8,383
Santa Fé Western	210	4,000,000	675,997	16,017
Argentine Northern	178	5,292,000	281,012	.....
Santa Fé and Cordoba	166	4,136,013	255,181	45,831
Argentine Eastern	160	5,134,527	195,932	1,800
Argentine Northeastern	65	31,248,000	48,063	.....
Buenos Ayres and Ensenada	108	8,957,077	2,417,306	1,104,522
Argentine Northern	86	1,942,605	1,975	.....
Chuput Central	70	1,000,000	48,925	18,030
Chumbicha and Catamarca	66	2,300,000	65,626	.....
First Entre Rios	9	153,839	17,171	2,427
Total	9,254	346,493,054	41,157,486	14,270,122

It will be seen that six railway companies did not earn enough to pay running expenses. Their aggregate deficit was $897,577.

Comparison of 1889 and 1890.—The following table gives a comparison of the aggregate figures for the last two years:

Year.	Open to traffic.	Capital.	Gross receipts.	Expenses.	Net profits.	Passengers carried.	Merchandise carried.
	Kilometers.					*Number.*	*Tons.*
1889	8,113	$249,907,796	$35,250,907	$24,420,252	$12,103,676	11,103,986	6,643,381
1890	9,254	346,493,054	41,157,486	27,784,941	14,270,122	10,069,606	5,420,781

From these aggregates it will be observed that, notwithstanding the increase of 700 additional miles opened to traffic in 1890, there was a decrease of 934,380 in the number of passengers and of 1,222,600 tons in the amount

of merchandise carried. There is no doubt that some of the railway lines are failures, built under a pressure and "boom" before there was a demand for them; yet it is eqally true that the general stagnation of business and commercial depression have greatly interfered with, and reduced temporarily, the traffic even on the best-paying roads. There will be a change for the better in these respects when the hard times disappear.

Guarantied railways.—Unfortunately, the Argentine Government, in its desire to foment and assist railway-building, has, in a number of cases, granted concessions for enterprises in the hands of English capitalists, which it was notorious would not be able to do more than—if so much as—pay expenses; and it guarantied that it would pay what was lacking from the receipts to make from 5 to 7 per cent annually upon the investments. It appears from the report which I have already referred to that, by virtue of these guaranties, the National Government has been systematically "bled" to the tune of millions of dollars. The following are the sums which have thus been paid in gold to these railways on such guaranties since the system was inaugurated:

Name of railway.	Rate guaranteed.	Guaranties paid.
	Per cent.	
Eastern Argentine	7	$5,010,824
Buenos Ayres and Pacific	7	4,439,034
Northern Central	7	1,850,000
Entre Riano Central	5	650,000
Argentine Great Western	7	2,675,853
Argentine Northeastern	5	59,475
Argentine Northwestern	5	8,094
Total		14,693,280

The sums which have thus within the last ten years been paid by the Government in the shape of guaranties are about 25 per cent of the original cost of the roads. And yet these guaranties must go on to the end, it being understood that several more roads will next year be added to the list. The total annual amount required to meet deficits is about one-fifth of the entire revenue of the Government. To be more exact, the minister of the interior reports that the sum required for this purpose annually is $4,624,473.93.

MINES AND MINING.

In regard to mines and mining, I have to report the same old story. During the last year there has been no movement of any importance in any of the accredited centers of mineral wealth. As heretofore, so now, there are hundreds of mines in the interior provinces which continue to promise profitable results, but the output continues to be most insignificant. Gold, except a mere show of it, keeps out of the reach of those who are constantly reporting infallible signs of its existence, while the amount of silver which is brought to the surface is out of proportion to the cost of the labor and machinery employed. The total value of the exports of minerals and metals in 1889 was $1,629,106; the total value for 1890 was only $673,690, of

which $501,271 was silver. The rest was principally copper and lead, except $6,392 of native gold.

We had on exhibition here in Buenos Ayres a short time ago a pig of native iron from the deposits of that metal in the province of Catamarca, and on the strength of it a syndicate is in process of formation to produce native iron. To bring the product down from the far-off interior would cost more than the iron and its freight together would come to imported from abroad.

In spite of all that has been written and proved in regard to the existence of coal in the Argentine Republic, no actual, tangible, steam-producing "black diamonds" have yet reached this market. What a fortune is in store for the man who shall be able to supply native merchantable coal to this country, with its thousands of miles of railway and its growing manufactures, all of which continue to be supplied with fuel from England and Wales, amounting now to more than 500,000 tons annually.

In regard to petroleum, I learn that the steam-producing qualities of that found in the neighborhood of Mendoza have been put to the test on some of the locomotives of the Pacific road, but with no very encouraging result. In order to utilize it for such purpose, a peculiar construction of the furnaces is necessary, and meanwhile English coal will continue to be used. So far as illuminating purposes are concerned, it is very evident that, for the present at least, the supply of kerosene must continue to come from the United States. The receipts last year were 16,677,577 liters, against 9,642,522 liters in 1886.

Besides the marble and granite quarries which have recently been opened in the southern part of this province, it is reported that inexhaustible deposits of slate and gritstone have also recently been discovered there.

Salt of a very superior quality is now regularly received at this port from the extensive salt works near Carmen de Patagones. The imports for 1890 were 850 tons, mostly of table salt; but it is probable that hereafter quite enough will be produced in the country to supply the demand without the necessity of depending on Cadiz for it.

FOREIGN NAVIGATION.

The foreign carrying trade of the Argentine Republic during the last year has been somewhat affected by the crisis as regards the tonnage of both sailing vessels and steamers. The following table gives the aggregate of the arrivals and departures for 1890, compared with the year previous:

Class of vessels.	Arrivals.		Departures.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
Sailing vessels	6,826	1,288,240	3,676	978,823	10,502	2,269,063
Steamers	7,047	5,052,715	5,933	4,529,646	12,980	9,582,361
Total	13,873	6,340,955	9,609	5,506,469	23,482	10,847,424
Total in 1889	14,445	6,710,686	11,469	5,842,972	25,823	12,555,958
Decrease	572	369,731	1,860	336,503	2,341	1,708,534

Table showing arrivals from and departures to each country in 1890.

Countries.	Arrivals.				Departures.			
	Sailing vessels.		Steamers.		Sailing vessels.		Steamers.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Africa	.....	.....	.....	.....	2	998	.....	.....
Germany	22	10,569	161	250,873	13	8,532	150	239,321
Antilles	2	1,161	.....	.....	269	164,221	.....	.....
Asia	.....	.....	.....	.....	6	4,372	.....	.....
Belgium	19	14,969	98	141,289	14	5,752	85	155,195
Brazil	146	19,485	115	41,771	209	60,114	138	59,858
Canada	8	5,971	.....	.....	15	11,777	.....	.....
Chile	1	359	2	3,376	92	76,868	2	3,155
Costa Rica	.....	.....	.....	.....	1	650	.....	.....
Spain	61	32,051	21	25,724	12	5,230	20	29,837
United States	235	148,165	44	61,188	240	150,368	17	23,791
France	31	13,775	177	395,456	19	7,633	179	395,000
Italy	31	9,729	108	199,398	15	7,538	75	142,756
Mexico	.....	.....	.....	.....	2	685	.....	.....
Norway	.....	.....	.....	.....	1	551	.....	.....
Holland	.....	.....	.....	.....	1	202	5	9,322
Paraguay	224	22,556	1,662	923,020	194	19,314	1,650	925,768
Portugal	.....	.....	.....	.....	4	1,258	57	76,343
Great Britain	843	474,651	548	800,155	555	284,148	404	461,489
Sweden	4	1,974	.....	.....	.....	.....	.....	.....
Uruguay	5,189	529,147	4,108	2,206,338	1,934	140,946	3,198	1,941,719
All other countries	10	3,678	3	4,127	51	27,666	53	64,102
Total	6,826	1,288,240	7,047	5,052,715	3,676	978,823	6,033	4,527,646

Table showing arrivals and departures according to flag in 1890.

Flag.	Arrivals.				Departures.			
	Sailing vessels.		Steamers.		Sailing vessels.		Steamers.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
German	84	39,899	162	252,853	100	47,032	153	242,591
Belgian	.....	.....	13	19,251	.....	.....	10	12,441
Austrian	38	17,591	.....	.....	55	27,880	.....	.....
Brazilian	53	2,014	121	35,755	26	876	114	33,665
Danish	30	10,838	.....	.....	20	9,357	.....	.....
Spanish	66	17,965	22	37,531	64	17,684	18	25,781
French	22	5,533	191	391,963	15	7,452	189	395,676
Dutch	9	3,150	.....	.....	17	6,237	.....	.....
British	1,060	357,804	2,367	2,291,987	439	272,942	2,056	2,075,357
Italian	254	122,874	102	184,083	219	113,039	84	149,677
Argentine	3,472	319,376	3,112	1,511,669	1,312	103,297	2,637	1,280,123
American	57	36,406	.....	.....	76	44,943	.....	.....
Norwegian	427	228,854	.....	.....	441	245,581	.....	.....
Paraguayan	102	8,667	17	715	80	4,844	14	436
Russian	13	6,573	.....	.....	18	9,295	.....	.....
Swedish	72	42,545	19	2,121	61	30,374	9	1,768
Uruguayan	1,055	64,979	900	310,048	726	35,163	722	294,809
Not named	12	3,172	21	14,739	7	2,827	27	15,322
Total	6,826	1,288,240	7,047	5,052,715	3,676	978,823	6,033	4,527,646

Table showing arrivals and departures at each port in 1890.

Ports.	Arrivals.				Departures.			
	Sailing vessels.		Steamers.		Sailing vessels.		Steamers.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Bahia Blanca	44	34,602	.....	.....	46	37,611	.....	.....
Bella Vista	.....	.....	253	127,842	.....	.....	155	134,096
Buenos Ayres	4,280	860,265	2,026	1,861,071	1,277	522,346	1,487	1,294,792
Campaña	66	29,790	107	86,661	55	22,760	106	84,221
Colon	82	4,246	523	351,100	67	4,398	426	353,546
Concepcion del Uruguay	190	6,156	311	205,161	163	5,635	323	226,876
Concordia	279	14,091	642	377,740	249	14,289	571	382,540
Corrientes	54	5,426	276	129,504	70	6,823	213	105,523
Diamante	.....	.....	144	91,593	.....	.....	152	95,066
Empedrado	.....	.....	82	56,843	.....	.....	104	68,363
Esquina	.....	.....	205	116,598	.....	.....	209	128,800
Formosa	.....	.....	177	95,504	.....	.....	175	91,841
Goya	.....	.....	154	79,308	.....	.....	148	77,075
Gualeguay	19	3,629	.....	.....	26	6,078	.....	.....
Gualeguachú	172	9,426	534	186,842	156	11,524	414	215,321
La Paz	4	1,036	250	130,128	12	2,333	255	129,992
La Plata	901	119,170	158	74,914	857	116,416	138	47,267
Monte Caseros	31	415	15	1,128	29	492	8	624
Paraná	86	13,919	256	132,816	27	3,132	255	127,334
Paso de los Libres	26	182	.....	.....	24	160	.....	.....
Posadas	32	264	.....	.....	28	256	.....	.....
Rosario	398	137,631	641	605,336	365	143,736	548	510,877
San Nicolas	33	11,765	166	268,014	78	34,159	152	250,226
Santa Fé	42	10,544	68	49,052	63	19,680	11	4,781
Villa Constitucion	19	8,339	.....	.....	15	7,836	.....	.....
Zárate	12	4,443	17	21,554	15	6,379	33	43,005
All other ports	56	12,901	42	4,006	54	12,780	150	155,480
Total	6,826	1,288,240	7,047	5,052,715	3,676	978,823	6,033	4,527,646

It will be seen from these tables that during the year 1890 not a single merchant steamer bearing the United States flag arrived in any of the ports of the Argentine Republic. There were 44 arrivals of steamers from the United States and 17 departures of steamers for American ports, but they all carried the British flag. The number of sailing vessels from the United States was 235, against 592 in 1889, a decrease of 357. The total number of arrivals of vessels under the American flag was only 57, against 207 in 1889.

TRANSIT TRADE.

The transit trade of the Argentine Republic, which a short time ago exhibited such a promising outlook, has dwindled to quite insignificant proportions.

The following are the figures for 1890:

Countries.	Ingress.	Egress.	Total.
Bolivia	$823,192	$3,283	$826,475
Brazil	21,048	96,587	117,635
Paraguay	35,659	261,897	297,556
Uruguay	36,560	417,254	453,814
Not specified	1,169,602	1,307,044	2,476,642
Total	2,086,061	2,086,061	4,172,122

These are the figures published by the statistical department, but they lack all the elements of being correct. The idea of making a forced balance of what passed into these countries and what passed out of them through the Argentine Republic is absurd, and the further fact that for the greater part of this transit trade the country is not specified is very suggestive of smuggling.

The following are the returns of the transit trade through the Argentine Republic for the last ten years:

Year.	Bolivia.	Brazil.	Paraguay.	Uruguay.
1881	$4,956,097	$1,038,830	$400,453	$186,263
1882	11,312,192	1,335,834	643,793	1,955,848
1883	8,193,791	1,023,487	536,538	1,602,678
1884	7,583,793	1,757,740	709,227	563,592
1885	12,021,927	1,386,853	518,822	429,734
1886	7,588,229	1,245,645	727,879	1,582,020
1887	6,622,264	854,460	521,224	1,094,523
1888	6,003,423	140,046	758,265	500,787
1889	3,434,032	179,975	407,470	396,278
1890	826,475	117,635	297,356	453,814

It will be seen that, in spite of the increased transit facilities which the Argentine Republic affords, the business is getting "small by degrees and beautifully less." The Bolivian transit is effected at the Rosario custom-house; that of Brazil at Monte Caseros custom-house.

FOREIGN COMMERCE.

The effects of the crisis are especially seen in the returns of the foreign commerce of the country. The imports for 1890 amounted to $142,240,812, against $168,569,884 in 1889, a decrease of $22,818,993. The exports for 1890 were $100,818,993, against $122,815,057 in 1889, a decrease of $21,996,064. This, however, the director of the statistical department informs us, is only an apparent decrease, for the reason that the exports in 1889 were made up in paper currency, which, he says, if reduced to gold, would make the exports for 1889 only $90,145,355; thus showing, according to this explanation, an actual increase of $10,673,638 in 1890. Even thus, however, the imports for 1890 show an excess of $42,240,812 over the exports.

The following table, compiled from the returns published by the national statistical office, shows the imports, exports, and total commerce of each custom-house in the country:

Custom-house.	Imports.	Exports.	Total.
Ajó	$37,295	$378,590	$415,885
Alvear	11,711	8,293	20,004
Baradero	42,236	413,323	455,559
Bahia Blanca	3,306,998	3,068,184	6,375,182
Bella Vista	38,761	20,977	59,738
Buenos Ayres	103,175,961	57,742,342	160,918,303
Campaña	2,159,790	975,982	3,135,775
Chubut	22,774	51,252	74,026
Colon	258,230	1,922,814	2,181,044
Concepcion del Uruguay	784,542	317,172	1,101,714
Concordia	2,091,035	2,715,763	4,806,798
Corrientes	279,383	25,871	305,254
Diamante	2,289	380,950	283,239
Empedrado	488,012	175,511	663,523
Esquina	60,175	18,236	78,411
Formosa	17,060	260	17,320
Goya	264,157	7,695	271,822
Gualeguay	84,650	221,930	706,580
Gualeguachú	187,579	877,928	1,065,507
Helvecia	17,876	422,440	440,316
Jujuy	50,061	211,511	261,572
La Cruz	12,052	3,200	15,252
La Paz	229,806	184,508	414,314
La Plata	3,001,016	1,129,247	4,130,263
Mendoza	65,684	1,237,917	1,303,601
Monte Caseros	24,500	451,412	475,912
Oran	6,331	2,451	8,782
Paraná	296,486	135,192	431,678
Paso de los Libres	13,899	19,104	33,003
Reconquista	50,000	.....	50,000
Rosario	15,640,642	16,004,708	31,645,350
Salta	76,730	184,790	261,520
Santa Fé	5,421,323	1,130,379	6,551,702
San Juan	20,147	868,424	888,571
San Lorenzo	.....	735,523	735,523
San Nicolas	531,072	5,046,413	5,777,485
San Pedro	63,919	1,967,065	2,030,984
Santo Tomé	9,558	.....	9,558
Trinchera de San José	27,455	.....	27,455
Victoria	7,002	.....	7,002
Villa Constitucion	3,061,200	190,720	3,251,920
Zárate	301,415	1,269,943	1,671,358
Total	142,240,812	100,818,993	243,059,805

The imports of Buenos Ayres, the principal entrepôt of the Argentine Republic, show a decrease of $17,193,929 compared with those of 1889, while the exports for the same time show a decrease of $20,480,290. Rosario, the second port in the country, shows a decrease on the returns of 1889 of $13,863,275 in imports and of $2,874,115 in exports. The smaller ports exhibit no important changes.

From the same source of information, I have compiled the following table, which gives the countries among which the trade of the Argentine Republic for 1890 was distributed:

Countries.	Imports.	Exports.	Total.
Germany	$12,301,472	$11,566,441	$23,867,913
Antilles	.....	975,075	975,075
Austria	.....	8,512	8,512
Belgium	10,986,710	12,003,086	22,989,796
Bolivia	85,509	296,952	382,461
Brazil	3,354,566	8,442,563	11,797,129
Chile	51,114	2,188,951	2,240,065
Spain	4,302,284	2,083,817	6,386,101
United States	9,301,541	6,066,958	15,368,499
France	19,875,877	26,683,318	46,559,195
Italy	8,663,027	3,194,802	11,857,829
Holland	850,121	160,249	1,010,361
Paraguay	1,724,050	336,566	2,060,616
Portugal	110,182	456,701	566,883
Great Britain	57,816,510	19,299,095	77,115,605
Norway and Sweden	174,360	61,722	236,082
Uruguay	5,885,758	5,506,675	11,392,433
Countries not named	6,757,731	1,487,510	8,245,241
Total	142,240,812	100,818,993	243,059,805

Comparing these returns with those of 1889, it appears that Great Britain, oblivious of the crisis, is almost the only country which shows an increase in its imports over the unprecedented figures of that year. They were $56,820,169 in 1889; in 1890 they were $57,816,510.

The imports from France in 1889 were $30,237,407; in 1890 they were only $19,875,877, a difference of over $10,000,000.

The imports from the United States in 1889 were $16,801,750; in 1890 they were only $9,301,541, a difference of $7,500,209.

The total trade of the Argentine Republic with Great Britain in 1889 was $71,751,563; in 1890, in the face of the crisis, it was $77,115,605.

The total trade with France in 1889 was $68,501,821; in 1890 it was only $46,559,195.

The total trade with the United States in 1889 was $24,528,441; in 1890 it was only $15,368,499.

A similar reduction is seen in the volume of trade with the other countries dealing with the Argentine Republic.

RIVER COMMERCE.

The stringency of the crisis does not seem to have had any effect in reducing the amount of the Argentine river commerce. The figures for 1890 reached to $99,520,743, of which $50,676,790 were of natural products and $48,843,953 of foreign merchandise.

That it may be seen how steadily this trade has been increasing, I give the returns for the last ten years:

Year.	Products of the country.	Foreign merchandise.	Total.
1881	$7,856,311	$19,646,157	$27,502,468
1882	8,108,553	21,852,594	29,961,149
1883	11,255,997	25,394,370	36,650,347
1884	14,615,401	29,689,475	44,304,876
1885	17,556,491	31,382,385	48,938,876
1886	13,501,820	37,398,110	50,899,930
1887	29,897,027	43,924,556	73,821,583
1888	36,830,177	58,138,309	94,968,486
1889	38,493,566	51,484,971	89,978,537
1890	50,676,790	48,843,953	99,520,743

Internal river trade.—The quantity and value of the most important articles of native production transported by river steamers were as follows:

Articles.	Quantity.	Value.
Bran....tons	5,433	$81,500
Alcohol....liters	1,314,270	157,712
Peas....tons	70	2,109
Starch....do	28	3,424
Hemp shoes....dozens	29,752	62,479
Canary seed....tons	52	3,264
Sugar....do	3,301	429,197
Lime....hectoliters	1,682,948	1,027,828
Charcoal....do	4,629,211	4,629,211
Barley....tons	460	9,198
Wooden sleepers....number	216,953	650,859
Brooms....dozens	3,564	7,484
Beams....number	208,931	27,161
Macaroni....tons	459	91,860
Hard bread....do	603	54,303
Biscuit....do	232	69,587
Flour....do	59,070	4,134,878
Soap....do	1,905	190,544
Wood....sticks	154,267,445	771,337
Linseed....tons	22,979	1,148,952
Quebracho timber....square meters	11,844,150	4,737,660
Corn:		
Shelled....tons	173,747	3,474,941
Unshelled....do	160	1,608
Peanuts....do	3,058	122,337
Fence posts....number	1,402,188	560,875
Potatoes....tons	18,750	750,000
Raisins....do	71	15,319
Baled hay....do	11,787	141,452
Beans....do	542	27,138
Ñandubay posts....do	660,878	462,615
Cheese....do	864	172,898
Quebracho woods....do	11,262	225,247
Salt....hectoliters	268,784	166,646
Seeds....tons	4,204	210,205
Hides, tanned....number	46,322	370,576
Tobacco....tons	1,154	115,429
Wheat....do	156,624	6,264,969
Wine....liters	322,361	51,578
Yerba tea....tons	1,643	205,470
Cement....do	26,171	274,806
Not specified	.....	232,066

The shipments of produce from Santa Fé amounted to $7,767,485; from Rosario, $6,772,944; from La Paz, $2,131,219; from Paraná, $1,322,154; from Campaña, $1,847,521; from Goya, $1,379,770; while the rest was distributed among a number of smaller ports along the Paraná and Uruguay rivers.

River tonnage.—The tonnage engaged in the river trade has almost doubled during the last ten years, the greatest increase being in the number of steamers employed upon the upper rivers. The following table shows the tonnage both of steamers and sailing vessels since 1881:

Year.	Steamers.	Sailing vessels.	Total.
	Tons.	*Tons.*	*Tons.*
1881	1,280,043	518,192	1,798,235
1882	1,351,468	478,465	1,829,933
1883	1,545,658	517,700	2,063,358
1884	1,875,222	554,453	2,429,675
1885	2,276,851	675,261	2,952,112
1886	1,981,406	650,048	2,636,454
1887	1,485,001	749,921	2,235,012
1888	1,860,340	732,178	2,592,518
1889	2,582,606	644,532	3,227,138
1890	2,542,081	782,768	3,324,849

The average tonnage of sailing vessels on the Paraná River in 1881 was 30 tons; of steamers, 220 tons. The average tonnage of sailing vessels in 1890 was 43 tons and of steamers 388 tons.

IMPORTS AND EXPORTS BY ARTICLES.

The following tables, which have been translated and compiled from the returns of the national statistical office, give the amount and the custom-house valuation of all articles imported into, or exported from, the Argentine Republic during the year 1890:

Table showing the imports into the Argentine Republic in 1890.

Articles.	Quantity.	Official value.
Live stock:		
Asses.....number...	11	$340
Horses and mares.....do.....	535	224,572
Hogs.....do.....	73	2,900
Sheep.....do.....	1,030	81,410
Cattle.....do.....	362	91,294
Total.....	.....	400,516
Comestibles:		
Olive oil.....kilograms...	5,111,828	1,686,955
Olives.....do.....	571,517	89,705
Starch.....do.....	1,016,998	191,246
Rice.....do.....	17,579,478	1,582,152
Saffron.....do.....	3,521	88,025
Sugar—		
Refined.....do.....	26,427,779	5,621,375
All other kinds.....do.....	3,113,249	404,750

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Comestibles—Continued.		
Codfish.....kilograms...	872,062	$143,474
Cocoa.....do.....	178,816	44,705
Coffee.....do.....	3,151,550	846,782
Cinnamon.....do.....	7,887	3,298
Meat.....do.....	102,141	70,108
Barley.....do.....	1,327,254	41,793
Chocolate.....do.....	133,666	133,666
Coca.....do.....	57,653	40,362
Confectionery.....do.....	139,017	94,991
Spices and condiments.....do.....	1,105,759	344,624
Farina.....do.....	1,670,949	83,549
Fecula.....do.....	64,078	16,019
Macaroni.....do.....	123,970	44,819
Fresh fruits.....do.....	.....	70,622
Dry and preserved fruit.....do.....	1,776,464	276,495
Flour—		
Wheat.....do.....	22,289	2,133
Of other grain.....do.....	73,198	15,040
Hams.....do.....	229,792	125,087
Vegetables, dried and canned.....do.....	2,276,070	276,265
Butter.....do.....	17,925	9,322
Lard.....do.....	383,486	118,880
Molasses.....do.....	3,834	640
Crackers and biscuits.....do.....	46,371	13,266
Figs.....do.....	125,840	18,901
Raisins.....do.....	357,768	83,316
Canned fish.....do.....	1,386,456	563,042
Cheese.....do.....	1,188,655	593,967
Salt.....do.....	854,036	42,701
Sausages.....do.....	20,831	15,162
Tea.....do.....	508,388	508,388
Bacon.....do.....	3,096	1,548
Wheat.....do.....	1,306,031	52,025
Yerba—		
Paraguayan.....do.....	7,627,668	1,067,872
Brazilian.....do.....	15,847,891	1,584,789
Total.....	.....	16,411,458
Liquors:		
Mineral waters.....dozens..	74,111	117,681
Wormwood—		
In bottles.....do.....	41,541	249,246
In casks.....liters...	196,346	76,572
Alcohol—		
In bottles.....dozens...	11,688	58,639
In casks.....liters...	426,161	68,239
Bitters—		
In bottles.....dozens...	97,737	586,480
In casks.....liters...	4,532	1,903
Cafia.....do.....	23,084	3,462
Beer—		
In casks.....do.....	92,736	15,766
In bottles.....dozens...	320,626	747,059
Chartreuse.....do.....	3,405	51,075
Cider—		
In bottles.....do.....	552	1,160
In casks.....liters...	287	103
Brandy—		
In casks.....do.....	120,166	43,259
In bottles.....dozens...	90,051	540,306

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Liquors—Continued.		
Gin—		
In casks.....liters...	1,120,405	$165,284
In bottles.....dozens...	4,338	13,014
Sirups.....	.....	4,481
Rum—		
In bottles.....dozens...	6,259	50,072
In casks.....liters...	36,590	14,626
Whisky—		
In casks.....do.....	13,580	5,431
In bottles.....dozens...	12,758	53,583
Champagne.....do.....	26,996	215,968
Wines—		
In bottles:		
Sherry.....dozens...	9,657	77,256
Port.....do.....	23,459	187,672
Bordeaux.....do.....	18,734	149,872
Vermouth.....do.....	56,633	339,798
All other.....do.....	19,768	94,269
In casks:		
Sherry.....liters...	59,104	30,734
Port.....do.....	288,885	150,250
Bordeaux.....do.....	29,334,498	2,933,450
Vermouth.....do.....	14,208	4,261
All other.....do.....	57,205,083	5,733,591
Vinegar—		
In casks.....do.....	67,951	4,756
In bottles.....dozens...	682	1,022
Total.....	.....	12,790,349
Tobacco:		
Cigars—		
Havana.....kilograms...	32,756	201,298
Other classes.....do.....	478,833	595,425
Cigarettes.....do.....	3,144	5,923
Leaf—		
Havana.....do.....	112,748	67,648
Other classes.....do.....	6,879,020	1,636,847
Fine cut—		
Havana.....do.....	42,306	33,846
Other classes.....do.....	3,827	2,450
Snuff.....do.....	8,818	10,580
Total.....	.....	5,554,017
Spun and woven goods:		
Carpet matting.....meters...	14,690	8,987
Mats.....dozens...	365	1,204
Frieze.....kilograms...	15,458	6,004
Carpeting.....do.....	470,336	481,946
Raw cotton.....do.....	32,642	4,755
Packcloth.....do.....	12,333,317	2,466,699
Bramant.....do.....	2,083,063	1,666,588
Baize.....do.....	3,934	7,868
Sailcloth.....do.....	284,116	279,257
Cassimeres—		
All wool.....do.....	1,216,177	2,916,425
Mixed.....do.....	1,083,116	1,083,116
Ribbon—		
Silk.....do.....	2,724	62,652
All other classes.....do.....	73,142	241,056

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Spun and woven goods—Continued.		
Cord—		
Silk.....kilograms...	34	$172
All other classes.....do.....	665	1,284
Haircloth.....do.....	24,250	1,940
Edging and inserting.....do.....	50,883	330,312
Tow cloth.....do.....	171,390	30,850
Blankets—		
Woolen.....do.....	11,629	28,874
All other classes.....do.....	192,626	294,997
Flannels—		
Woolen.....do.....	257,027	771,081
All other classes.....do.....	131,313	236,829
Thread—		
Pack.....do.....	120,939	45,956
Common.....do.....	1,905,631	323,178
Silk.....do.....	7,602	117,127
Yarn.....do.....	55,732	81,020
Impermeable cloth.....do.....	215,941	78,777
Rope and cordage.....do.....	1,079,351	207,019
Duck and sailcloth.....do.....	951,178	549,604
Lamp wicks.....do.....	62,112	39,370
Billiard cloth.....do.....	1,467	5,574
Houseline and twine.....do.....	1,164,166	399,909
Raw hemp.....do.....	646,364	45,245
Soles for alpargata shoes (hemp).....do.....	1,182,115	354,634
Prunella cloth.....do.....	590	1,320
Gold and silver lace.....	.....	8,614
Silk lace.....kilograms...	13,089	68,759
Cotton goods.....do.....	6,866,004	5,675,105
Hempen goods.....do.....	190,002	87,587
Linen goods.....do.....	94,411	167,870
Woolen goods.....do.....	294,194	844,859
Mixed goods.....do.....	456,459	1,258,027
Silks.....do.....	27,383	477,203
Jutes.....do.....	178,452	39,868
Velvets.....do.....	897	17,848
Gutta-percha goods.....do.....	18,014	43,305
Chintz and calicoes.....do.....	1,631,289	1,631,289
Total.....	.....	23,491,363
Clothing, etc.:		
Shirts.....dozens...	16,044	186,985
Chemises.....do.....	1,493	12,286
Undershirts—		
Silk.....kilograms...	880	22,000
Other classes.....do.....	265,823	462,370
Do.....dozens...	100	342
Drawers—		
Silk.....kilograms...	7	175
Other classes.....do.....	1,918	4,671
Do.....dozens...	1,896	15,932
Cravats.....do.....	26,530	84,493
Collars and cuffs.....do.....	47,514	80,602
Corsets.....do.....	6,848	47,845
Hats and bonnets.....do.....	2,143	9,774
Gloves, other than kid.....kilograms...	3,247	19,241
Stockings—		
Silk.....do.....	445	7,126
Other classes.....do.....	364,415	743,896

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Clothing, etc.—Continued.		
Handkerchiefs—		
Silk ..... kilograms	12,060	$241,060
Other classes ..... do	230,986	359,640
Towels ..... do	72,284	138,295
Dressing gowns ..... dozens	1,295	8,716
External wearing apparel for men	.....	1,302,270
Umbrellas and parasols ..... number	62,288	76,250
Men's hats and caps ..... dozens	86,641	658,802
Manufactured articles—		
Cotton	.....	785,197
Hempen	.....	1,836
Linen	.....	200,646
Woolen	.....	318,321
Mixed	.....	635,244
Silk	.....	77,573
Other textiles	.....	30,015
Total	.....	6,533,603
Drugs and chemicals:		
Acid—		
Sulphuric ..... kilograms	1,246,376	62,219
Muriatic ..... do	49,320	6,208
Nitric ..... do	12,152	2,825
All others	.....	42,832
Oil—		
Linseed ..... kilograms	452,237	80,908
Palm ..... do	61,209	12,241
All others	.....	329,176
White lead ..... kilograms	71,104	14,221
Alcohol ..... liters	1,450	286
Tar ..... kilograms	175,469	8,873
Alum ..... do	26,231	1,605
Ammonia ..... do	65,749	23,013
Indigo ..... do	2,124	3,186
Sulphur ..... do	735,017	8,707
Spirits of turpentine ..... do	437,261	57,442
Varnish ..... do	98,253	78,600
Bicarbonate of potassium ..... do	50	25
Bicarbonate of soda ..... do	360,374	25,624
Benzine ..... do	76,204	12,017
Bitumen ..... do	93,213	26,478
Borax ..... do	35,228	10,342
Chlorate of lime ..... do	52,483	2,627
Carbonate of magnesia ..... do	2,120	848
Carbonate of potassium ..... do	16,873	2,531
Carbonate of soda ..... do	328,195	12,715
Glue ..... do	110,968	17,404
Paint—		
In powder ..... do	1,958,916	149,488
Prepared ..... do	2,041,057	189,749
Fireworks ..... do	86,549	30,293
Dextrine ..... do	9,406	1,881
Stearine ..... do	448,497	134,549
Essences	.....	43,860
Specifics for curing sheep scab	.....	269,488
Glucose ..... kilograms	143,401	11,471
Phosphorus ..... do	16,079	16,249
Gelatin ..... do	23,357	14,763
Gums ..... do	139,011	33,279
Glycerine ..... do	12,480	5,585
Iodide of potassium ..... do	643	3,215

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Drugs and chemicals—Continued.		
Soap—		
Common.....kilograms...	36,930	$10,642
Perfumed.....do.....	42,504	22,784
Malt.....do.....	2,902,798	290,279
Prepared medicines.....	.....	273,560
Perfumery.....	.....	257,624
Resin.....kilograms...	4,327,392	184,676
Potash.....do.....	9,146	1,567
Powder and other mixed explosives.....do.....	72,238	34,009
Pharmaceutical products.....	.....	65,595
Chemical products.....	.....	417,785
Chloride of soda.....hectoliters...	737,735	453,675
Calcined soda.....kilograms...	2,581,048	77,430
Caustic soda.....do.....	132,806	6,640
Sulphate of iron.....do.....	10,792	216
Sulphate of magnesia..... do.....	6,400	640
Sulphate of quinine.....do.....	19	760
Sulphate of lime.....do.....	265,864	6,557
Printing and lithographing ink.....do.....	52,958	14,478
Writing ink.....do.....	81,575	8,157
Vaseline.....do.....	3,289	1,645
Total.....	.....	3,875,542
Lumber and wooden articles:		
Lumber—		
Pine.....square meters...	9,928,465	4,263,132
Walnut.....do.....	89,703	89,703
Oak.....do.....	76,593	61,269
Cedar.....do.....	212,555	85,827
Mahogany.....do.....	1,018	1,733
Quebracho.....do.....	37,499	7,716
All other kinds.....do.....	1,078,964	599,707
Trunks and boxes.....number...	361,504	37,084
Carts and carriages.....do.....	694	266,074
Casks and barrels (empty).....do.....	29,621	88,119
Musical instruments.....	.....	80,429
Launches and boats.....number...	40	118,260
Furniture.....	.....	1,116,105
Pianos.....number...	858	187,210
Canes.....dozens...	1,293	8,837
Other articles of wood.....	.....	588,207
Total.....	.....	7,399,412
Paper and paper manufactures:		
Paper—		
Writing.....kilograms...	420,953	141,371
Drawing.....do.....	25,462	13,280
News.....do.....	4,825,416	1,254,608
Wall.....do.....	339,191	140,451
Wrapping.....do.....	931,370	186,089
Engraving.....do.....	38,264	13,302
Cigarette.....do.....	232,116	197,299
Blotting.....do.....	15,057	6,022
Litmus.....reams...	2,067	5,377
Silk.....kilograms...	23,310	8,922
Albums.....dozens...	210	2,355
Playing cards.....gross...	2,245	23,675
Cardboard.....kilograms...	1,240,591	160,542
Papier-maché, articles of.....	.....	379,415
Other articles of paper.....	.....	195,501

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Paper and paper manufactures—Continued.		
Books—		
Blank.....kilograms...	240,601	$178,571
Printed.....do.....	425,600	425,600
Music, printed.....do.....	8,975	7,176
Other printed matter.....do.....	190,431	226,357
Polygraphic products.....	.....	52,685
Total.....	.....	3,628,598
Leather and leather manufactures:		
Shoes.....dozens...	52,696	397,695
Pocketbooks, cigar cases, etc.....do.....	10,897	33,088
Valises and satchels.....number...	1,713	7,515
Saddles.....do.....	2,049	20,500
Leather gloves.....kilograms...	2,541	40,656
Leather ornaments.....	.....	146,696
Other articles of leather.....	.....	105,720
Raw hides.....	.....	36,494
Cured hides.....	.....	20,022
Sole leather.....kilograms...	10,295	28,157
Pelts.....	.....	868,166
Total.....	.....	1,704,709
Iron and iron manufactures:		
Iron ore.....kilograms...	182,066	21,839
Anchors.....do.....	43,264	4,327
Arms.....	.....	260,554
Wire—		
For fencing.....kilograms...	10,205,369	571,132
All other kinds.....do.....	625,968	72,197
Needles.....thousands...	32,188	13,171
Kitchen utensils.....	.....	372,105
Nails.....kilograms...	1,105,242	147,026
Iron chains.....do.....	305,542	37,041
Safes.....do.....	157,129	34,567
Piping.....do.....	4,153,192	331,904
Cooking stoves.....do.....	188,971	23,208
Cutlery.....	.....	261,723
Axles and springs.....kilograms...	255,622	55,821
Iron hoops.....do.....	1,369,483	54,764
Iron ornaments.....	.....	491,912
Unmanufactured iron.....kilograms...	24,144,040	949,003
Tools and implements.....	.....	254,439
Iron furniture.....	.....	20,387
Steel pens.....gross...	32,412	6,843
Girders and columns.....kilograms...	14,008,175	599,477
Plows.....number...	26,790	217,296
Corn-shellers.....do.....	2,599	48,507
Mowers.....kilograms...	21,995	11,437
Rakes.....do.....	20,792	6,862
Plowshares.....do.....	84,306	25,066
Planters.....number...	258	17,805
Harvesters.....do.....	1,045	165,015
Threshers.....do.....	43	35,940
Shovels, spades, and picks.....kilograms...	269,172	64,718
Other agricultural implements.....	.....	39,183
Pumps.....number...	348	7,968
Sewing machines.....do.....	13,079	182,029
Printing and lithographic presses.....do.....	155	74,912
Presses of other kinds.....kilograms...	34,128	5,129

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Iron and iron manufactures—Continued.		
All other machinery and motors		$2,318,036
Other iron articles		1,764,264
Total		9,566,752
Materials for public works:		
Railways		34,074,830
Gas		201,292
Mining		72,906
Electric lighting		176,667
Sewerage		412,506
Port works		374,551
Tramways		592,220
Telegraph		49,701
La Plata public works		195,243
Telephones		8,689
Waterworks		114,898
Total		36,273,503
Metals and their manufactures:		
Jewelry		296,030
Bronze powder ..... kilograms	5,348	16,044
Copper and bronze—		
Not manufactured ..... do	65,554	27,530
Manufactured		194,762
Tin composition ..... kilograms	133,387	56,025
Manufactured		1,230
Scientific instruments		88,311
Musical instruments		319
Tin ..... kilograms	1,959,476	157,389
Manufactured articles		43,061
Iron belting		377,911
Gold leaf		16,020
Lead ..... kilograms	4,789,096	338,612
Manufactured		169,781
Watches—		
Gold ..... number	5,224	129,185
Other metals ..... do	22,812	90,333
Clocks ..... do	16,769	25,274
Weights and scales ..... do	4,391	13,028
Type ..... kilograms	107,095	55,689
Zinc ..... do	1,011,589	96,142
Manufactured		13,145
Other metals, manufactured		63,841
Total		2,669,662
Glass, stone, and crystal ware, etc.:		
Tiles—		
For flooring ..... thousands	7,756	142,114
For paving ..... do	1,400	37,278
Glass bottles ..... dozens	238,624	71,584
Lime ..... hectoliters	8,703	6,357
Crystals for watches and spectacles		480
Glassware in general		543,023
Lamps		490,969
Bricks ..... thousands	601	19,226
Stoneware in general		432,843
Marble and alabaster ..... square meters	53,518	107,745
Slabs ..... do	1,108	2,049
Works of art		80,251

Table showing the imports into the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Glass, stone, and crystal ware, etc.—Continued.		
Mosaics.....kilograms...	1,851,923	$102,150
Terra cotta works of art, etc.....	.....	41,040
Precious stones, unset.....	.....	21,608
Lithographing stone.....kilograms...	35,083	3,509
Grindstones.....do.....	185,373	7,497
Building stone.....	.....	778,786
Slate roofing.....square meters...	62,459	24,985
Porcelain in general.....	.....	309,442
Roofing tiles.....thousands...	2,090	104,500
Cement.....kilograms...	24,651,478	394,423
Glass and crystal.....square meters...	402,182	186,204
Mirrors and looking-glass.....do.....	34,670	227,460
Total.....	.....	4,135,523
Combustibles:		
Candles.....kilograms...	678,445	203,496
Nut coal.....do.....	514,582,061	5,145,820
Coke.....do.....	1,816,380	30,872
Matches—		
Wax.....do.....	3,505	2,979
Wooden.....do.....	103,021	32,967
Kerosene.....liters...	16,677,570	833,877
Total.....	.....	6,250,011
Miscellaneous manufactured articles:		
Fancy articles.....	.....	892,377
Buttons.....gross...	153,606	73,117
Cork.....kilograms...	173,907	52,169
Sponges.....do.....	3,140	13,964
Cases and workboxes.....dozens...	436	3,257
Gutta-percha articles.....	.....	92,254
Toys.....	.....	134,314
Pencils.....gross...	7,358	11,053
Hops.....kilograms...	77,019	38,554
Church ornaments.....	.....	42,478
Pichua.....kilograms...	76,686	53,681
Paintings.....	.....	30,486
Straw goods.....	.....	93,584
Live plants.....	.....	21,495
Leeches.....thousands...	123	1,848
Seeds.....kilograms...	1,400,014	109,818
Druggists' utensils.....	.....	182,264
Writing and office materials.....	.....	102,345
Various unenumerated articles.....	.....	3,006,748
Total.....	.....	4,955,803
Grand total.....	.....	142,240,812

Table showing the exports from the Argentine Republic in 1890.

Articles.	Quantity.	Official value.
Animals and animal products:		
Asses.....number...	6,793	$67,930
Horses and mares.....do.....	29,052	521,974
Goats.....do.....	650	1,450
Hogs.....do.....	3	30
Sheep.....do.....	50,008	159,428
Mules.....do.....	11,755	244,350
Cattle.....do.....	150,003	3,579,456
Horns.....kilograms...	2,289,806	137,388
Hair.....do.....	2,324,215	929,686
Skins—		
Goat.....do.....	1,462,111	1,023,478
Kid.....do.....	502,863	754,295
Sheep.....do.....	27,148,432	6,787,108
Ox and cow hides—		
Dry.....number...	3,053,649	5,759,745
Salted.....do.....	1,294,109	972,473
Horsehides—		
Dry.....do.....	54,716	82,074
Salted.....do.....	173,161	519,483
Hide cuttings.....kilograms...	1,822,733	45,568
Wool, unwashed.....do.....	118,405,604	35,521,681
Total.....	.....	61,306,597
Agricultural products:		
Bran.....kilograms...	2,833,704	28,337
Peas.....do.....	3,310	167
Canary seed.....do.....	148,478	10,392
Barley.....do.....	1,308,627	13,871
Fresh fruits.....	.....	28,096
Flax.....kilograms...	30,720,636	1,228,825
Corn.....do.....	707,281,955	14,145,639
Peanuts.....do.....	789,276	39,464
Potatoes.....do.....	871,145	43,557
Hay.....do.....	19,121,723	198,866
Beans.....do.....	37,498	2,250
Seeds.....do.....	682,299	15,113
Wheat.....do.....	327,894,151	9,836,824
Total.....	.....	25,591,401
Industrial products:		
Animal oil.....kilograms...	97,065	9,707
Sugar.....do.....	100,384	16,061
Canned meats.....do.....	474,009	42,661
Frozen sheep carcasses.....number...	20,413,816	1,633,105
Canned soups.....kilograms...	42,190	10,547
Specific for curing sheep scab.....	.....	6,252
Extract of beef.....kilograms...	187,566	375,132
Macaroni.....do.....	36,835	7,367
Biscuits and crackers.....do.....	94,179	8,476
Glycerine.....do.....	161,306	46,522
Guano.....do.....	47,080	1,507
Flour.....do.....	12,017,875	600,894
Meal flour.....do.....	76,700	19,175
Salted tongues.....do.....	741,650	185,412
Butter.....do.....	19,215	9,608
Pepsin.....do.....	13,830	20,745
Native wines.....liters.....	10,685	1,923
Cheese.....kilograms...	30,807	9,242

Table showing the exports from the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Industrial products—Continued.		
Tallow and grease.....kilograms...	17,361,989	$1,996,629
Jerked beef.....do.....	43,481,156	3,913,304
Tripes—		
Salted.....do.....	272,898	13,645
Dry.....do.....	7,330	293
Frozen beef carcasses.....do.....	662,860	53,029
Total.....	.....	8,999,236
Products of the forest:		
Vegetable carbon.....hectoliters...	178,452	178,452
Sleepers.....number...	24,248	72,744
Paling and posts.....do.....	73,291	9,528
Cabinet wood.....	.....	171,485
Ñandubay posts.....number...	318,109	154,607
Quebracho—		
In logs.....kilograms...	35,844,495	717,689
Lumber.....square meters...	217,638	108,819
Total.....	.....	1,413,324
M neral products:		
Auriferous sand.....kilograms...	37,600	6,392
Bismuth.....do.....	6,800	23,800
Borax.....do.....	148,205	8,683
Borate of lime.....do.....	64,313	5,365
Copper, in bars.....do.....	102,392	40,957
Tin.....do.....	110,040	55,020
Silver metal.....do.....	12,524	125,240
Ore—		
Copper.....do.....	87,464	23,615
Silver.....do.....	264,142	132,071
Lead.....do.....	93,155	7,452
Silver bullion.....do.....	6,099	243,960
Lead, unmanufactured.....do.....	11,352	1,135
Total.....	.....	673,690
Products of the chase:		
Skins—		
Carpincho.....number...	71,459	59,311
Nutria.....kilograms...	429,044	214,522
All other.....	.....	39,594
Pelts, undressed.....kilograms...	276	108
Ostrich feathers.....do.....	31,900	32,538
Total.....	.....	346,073
Miscellaneous articles:		
Alcohol.....liters...	5,347	802
Bones and bone ash.....kilograms...	38,687,847	620,602
Wax.....do.....	6,798	3,059
Ice.....do.....	47,900	958
Old iron.....do.....	7,012,982	175,325
Honey.....do.....	52,799	9,504
Live plants.....	.....	15
Salt.....hectoliters...	106,884	66,268
Dried blood.....kilograms...	492,263	24,613
Vermicelli.....do.....	310	37
Lard.....do.....	8,895	426
Sole leather.....	.....	12,840

Table showing the exports from the Argentine Republic in 1890—Continued.

Articles.	Quantity.	Official value.
Miscellaneous articles—Continued.		
Leaf tobacco.....kilograms...	3,493	$524
Linseed cakes.....do.....	517,400	77,610
Peanut cakes.....do.....	532,943	79,941
Roots.....do.....	361,774	54,266
Other articles of native production.....	.....	1,105,963
Articles reëxported.....	.....	255,913
Total.....	.....	2,071,676
Grand total.....	.....	100,818,993

ARGENTINE OVERTRADING.

A study of the foregoing tables discloses the fact that, while the volume of Argentine foreign trade for 1890 shows some contraction, the conditions of the trade itself exhibit no very great economic improvement. There is quite the same relative disproportion between imports and exports which has for years characterized the foreign commerce of the Argentine Republic. The balance of trade, which some badly educated River Plate political economists seem to be totally indifferent about, is still very greatly against the country. Indeed, the trade tables of the last ten years show how from small beginnings the amounts of gold which have been drawn out of the country to meet its obligations to foreign merchants have reached to figures which no healthy trade could endure. Adding the last year to the list, the following is the exhibit:

Year.	Imports.	Exports.	Balance against the country.
1880.....	$45,535,880	$58,380,787	.....
1881.....	55,755,927	57,938,272	.....
1882.....	61,266,044	60,388,929	$907,115
1883.....	80,435,802	60,207,976	20,227,852
1884.....	90,056,144	68,029,836	26,026,308
1885.....	92,221,969	83,879,100	8,342,369
1886.....	95,408,745	69,834,841	25,573,904
1887.....	117,352,125	84,421,820	32,930,305
1888*.....	128,412,110	77,009,000	51,403,110
1889*.....	164,569,884	90,145,355	74,424,529
1890.....	142,240,812	100,818,993	41,421,819

* Exports reduced to gold by the national statistical office.

These figures tell the story of the Argentine crisis with an emphasis which can not be misunderstood, and they explain the disastrous system of bookkeeping which has been, and which continues to be, in vogue in the Argentine Republic. It is absurd to say that these annual excesses of imports over exports do not have to be met by remittances of gold or its equivalent in exchange.

This excessive overtrading, however, would seem to have reached its culminating point in 1889. The returns for 1890 have a ray of hope in them,

in this, that the importations are $22,329,072 less than for the previous year. The lines of goods which have been most affected by the crisis will be more fully seen in the following comparative table:

Articles.	1889.	1890.
Animals on the hoof	$152,933	$400,516
Alimentary substances	18,350,904	16,411,458
Liquors	15,301,607	12,790,340
Tobaccos	1,895,788	2,554,017
Woven goods	24,149,242	23,491,363
Ready-made clothing and confections	8,080,180	6,533,603
Drugs and medicines	4,756,797	3,875,542
Lumber, etc	12,106,858	7,399,412
Paper, etc	3,940,824	3,628,598
Boots and shoes, etc	2,502,796	1,704,709
Hardware, etc	24,727,113	9,566,752
Materials for railways, etc	24,173,749	36,273,503
Tin, brass, and other metallic ware	3,871,811	2,269,662
Earthern, glass, and stone ware, etc	6,658,646	4,135,523
Combustibles, etc	7,593,810	6,852,011
Various manufactured articles	6,235,929	4,836,244
Ships' stores	69,897	119,559
Total	164,569,884	142,240,812

It will be seen from this table that the decrease is general in every line of imports, except animals on the hoof, tobacco, ship stores, and materials for railway and other constructions, and that the great increase has been in the latter articles—an increase which at least shows material progress. The imports, however, in the lines of luxury and unproductive consumption continue to be out of proportion to the population of the country. The increase of population since 1880 is a mere bagatelle, and yet the imports, which then reached to only $45,000,000, now annually run to three or four times that amount.

In regard to the exports of the Argentine Republic, the figures are much more satisfactory. While the actual increase of shipments over the previous year is not very large, yet it shows that the productive powers of the pampas are not seriously affected by the mismanagement of the financial affairs of the Government or the depreciation of the currency, and give an earnest that the exports will in time reach to such figures as to bring about a change for the better in the trade relations of the country. The following is a classified table of the shipments, compared with those of the year previous, reduced to a gold basis:

Articles.	1889.	1890.
Products of the cattle and sheep industry	$69,162,739	$61,306,597
Products of agriculture	10,107,173	25,591,401
Industrial products	6,305,422	8,999,236
Products of the forest	793,297	1,413,324
Products of the mines	1,629,160	673,690
Products of the chase	122,731	346,073
Various	1,716,399	2,488,672
Total	90,145,355	100,818,993

The increase is general, except in the leading line of the country's exports. The wool clip last year, owing to various causes which may not occur again, was unusually short in quantity and depressed in prices, thus materially reducing the aggregate figures. What the nation is above all things counting on in the coming year to pull it out of its troubles is a good wool season and a large wheat crop. This is the same expectation, however, which was cherished last year and the year previous; but good wool clips and large wheat harvests will never be able of themselves to save the situation so long as the imports of champagne, French millinery, and the ten thousand articles of useless luxury continue to be so greatly in excess of the exports.

TRADE WITH GERMANY.

The total trade of Germany with this country was $23,867,913 in 1890, against $32,598,226 in 1889. The imports show a falling off of $3,176,282 and the exports of $5,554,031; total decrease, $8,730,313. The principal lines of imports from Germany in 1890 were the following:

Articles.	Value.	Articles.	Value.
Rice	$603,657	Railway materials	$423,380
Refined sugar	195,764	Toys	79,360
Dried fish	120,939	Glassware	260,533
Liquors	628,836	Porcelain ware	111,819
Sackcloth	736,817	Leather	110,364
Flannels	694,242	Hardware	433,704
Cotton goods	532,465	Pianos	111,805
Stockings	406,031	Furniture	335,549
Ready-made clothing	1,270,688	All other imports	3,960,644
Malt	289,426	Total	12,301,472
Printing paper	683,724		
Machinery	312,222		

The exports to Germany consisted principally of the following articles:

Articles.	Value.	Articles.	Value.
Sheepskins	$261,889	Extract of meats	$209,428
Ox and cow hides	1,274,876	Cabinet woods	134,037
Horsehides	496,044	Silver metal	125,240
Wool	7,419,405	All other shipments	550,032
Linseed	115,124	Total	11,566,441
Corn	699,322		
Wheat	281,044		

The falling off in exports to Germany is explained by the fact that the wool shipments in 1889 reached to 34,295 tons, whereas in 1890 they amounted to only 24,731 tons.

TRADE WITH BELGIUM.

The Argentine trade with Belgium also shows considerable contraction. The imports in 1890 were $10,986,710, against $13,958,247 in 1889, a decrease of $2,971,537; the exports in 1890 were $12,003,086, against

$16,326,423 in 1889, a decrease of $4,323,337. The total decrease of trade was $7,294,874. The principal imports for 1890 were as follows:

Articles.	Value.	Articles.	Value.
Refined sugar	$569,567	Implements and machinery	$465,266
Liquors	355,000	Materials for public works	1,974,282
Tobacco and cigars	419,141	Glass and glassware	688,723
Woolen goods	1,821,529	All other imports	2,816,843
Furniture	276,662	Total	10,986,710
Boots and shoes	198,838		
Hardware	1,401,159		

Among the imports not enumerated were 1,584 tons of writing, printing, wrapping, and card paper.

The following were the exports to Belgium:

Articles.	Value.	Articles.	Value.
Horsehair	$307,312	Flour	$55,174
Sheepskins	176,173	Extract of meat	160,236
Ox and cow hides	1,881,322	Linseed	154,639
Wool	6,413,364	All other exports	550,795
Corn	1,097,957	Total	12,003,036
Wheat	1,276,064		

The wool shipments to Belgium in 1890 amounted to 21,337 tons, against 30,578 tons in 1889.

TRADE WITH FRANCE.

Still more noticeable is the manner in which the Argentine trade with France has been reduced by the crisis. The imports in 1889 were $30,237,407; in 1890 they amounted to only $19,875,877, a falling off of $10,361,530. The exports in 1889 were $38,264,414; in 1890 they were only $26,683,318, a falling off of $11,581,096. The total decrease of trade was $21,942,626. The imports were as follows:

Articles.	Value.	Articles.	Value.
Comestibles and groceries	$3,900,935	Hardware	$411,617
Wines and liquors	4,836,484	Machinery, etc	869,666
Dress and other goods	4,332,416	Jewelry, etc	692,528
Perfumery and drugs	690,694	All other imports	2,944,575
Furniture, etc	655,472	Total	19,815,877
Paper, etc	481,500		

Among the imports were 15,478 tons of refined sugar, 28,941,904 liters of Bordeaux wines in casks, 1,145,983 kilograms of soles for hemp shoes, 125 tons of printed books, 785 tons of olive oil, 678 tons of canned vegetables, and 149 tons of canned fruits.

The exports from the Argentine Republic to France were as follows:

Articles.	Value.	Articles.	Value.
Horsehair	$128,863	Flour	$16,984
Kid skins	461,162	Grease	176,686
Sheepskins	4,985,916	Cabinet woods	97,725
Wool, unwashed	16,746,254	Silver mineral	45,834
Linseed	132,827	All other exports	1,457,080
Corn	1,841,046	Total	26,683,718
Wheat	486,397		
Frozen sheep	106,544		

The wool shipments to France in 1890 amounted to 55,820 tons, against 61,244 tons in 1889. The shipments of sheepskins amounted to 19,945 tons, against 27,715 tons in 1889. The shipments of mutton carcasses in 1890 were 1,331 tons, against 987 tons in 1889.

TRADE WITH GREAT BRITAIN.

The trade of the Argentine Republic with Great Britain reached larger figures in 1890 than ever before. The crisis, which, as we have seen, caused other nations to take in sail, emitted no voice of warning to English manufacturers. They continued, as ever, on the old-time credit system to overload custom-house deposits with many lines of goods for which the sale was already slack, while some consignees, indeed, were already asking for extensions. As showing the course of English trade, I give the following figures for the last ten years:

Year.	Imports.	Exports.	Total.
1881	$16,035,277	$3,889,424	$19,924,701
1882	19,554,962	7,625,516	27,180,478
1883	30,695,963	5,956,093	36,652,056
1884	39,727,694	7,211,437	37,939,131
1885	35,357,648	12,816,341	48,191,909
1886	33,432,660	10,071,850	43,504,510
1887	34,779,210	17,085,000	51,864,220
1888	44,044,851	17,061,411	61,106,262
1889	56,820,169	14,931,394	71,571,563
1890	57,816,510	19,299,095	77,115,605

The imports from Great Britain for 1890 were principally as follows:

Articles.	Value.	Articles.	Value.
Live stock for breeding purposes	$201,817	Hardware, machinery, etc.	$3,263,656
Comestibles and groceries	1,095,748	Materials for public works	26,596,724
Wines and liquors	420,922	Jewelry, etc	869,794
Woven goods, woolens, and cottons	13,625,738	Glass and stone ware	931,100
Ready-made clothing	1,727,508	Stone coal and coke	4,480,425
Drugs, paints, and chemicals	1,091,569	All other imports	2,423,198
Furniture, etc	670,184	Total	57,816,510
Paper, etc	418,127		

The exports from the Argentine Republic to Great Britain in 1890 consisted of the following articles:

Articles.	Value.	Articles.	Value.
Goatskins	$115,732	Flour	$34,440
Sheepskins	509,196	Salted tongues	92,920
Ox and cow hides:		Grease	618,634
Dry	289,400	Frozen beef	53,029
Salted	1,401,504	Cabinet woods	616,188
Wool, unwashed	1,444,209	Silver and other minerals	315,650
Linseed	574,392	Bones and bone ash	427,350
Corn	6,804,498	All other exports	608,043
Wheat	3,867,249	Total	19,899,095
Frozen sheep	1,526,561		

The wool shipments amounted to 4,814 tons; corn, 340,224 tons; wheat, 128,908 tons; congealed mutton, 19,802 tons; grease, 5,379 tons; cabinet woods, 23,213 tons; and bones and bone ash, 26,708 tons.

In reference to the Argentine trade with Great Britain, it may be remarked, as in some sort an explanation of the immense figures which it has reached, that the commercial and financial relations between the two countries are so intimate and interwoven with each other that it is no easy matter to at once "put down the brakes" and stop short at a moment's warning. It must be borne in mind that, aside from their vast mercantile interests, there are hundreds of other ties which now connect the two countries—investments of British capital in lands, in cattle and sheep farms, in meat export establishments, in manufactures, in mining, in river steamers, in tramways and street cars, in railways, in docks, in gas companies, in water and drainage works, in banking, etc.—amounting to hundreds of millions of dollars, to which is to be added other hundreds of millions invested in national and provincial securities; and, in spite of the crisis, in spite of depression of trade, in spite of losses by exchange, losses by extension of credit, losses by bad debts, it is impossible for Great Britain to treat this country as a chance customer and compel a liquidation of outstanding accounts. It is one of those cases where business men must "suffer and be strong."

TRADE WITH THE UNITED STATES.

The trade of the United States with the Argentine Republic, not being complicated with other interests, such as those which Great Britain possesses, was not slow in exhibiting the effects of the business depression. "Forewarned is forearmed," and our manufacturers and other shippers at once in great part failed to fill orders or stopped consignments. The result shows for the year 1890 a very marked contraction in the aggregate trade, and especially in the amount of imports from the United States.

For the purpose of comparison, I give the figures for the last ten years:

Year.	Imports.	Exports.	Total.
1881	$4,268,110	$4,035,714	$8,323,824
1882	5,094,764	2,950,582	8,051,346
1883	4,933,054	3,510,574	8,443,628
1884	7,454,832	4,054,848	11,519,680
1885	7,006,719	5,563,841	12,570,560
1886	7,673,284	3,580,406	11,253,690
1887	11,004,553	5,938,808	16,943,361
1888	9,909,895	6,665,520	16,575,415
1889	16,801,750	7,726,691	24,528,441
1890	9,301,541	6,066,958	15,368,499

The aggregate figures for 1890 are less than those even of 1887. Compared with those of 1889, there is a decrease of $7,500,209 in imports and of $1,659,733 in exports; total decrease, $9,156,942. These returns, however, as I have explained in former reports, do not give the total imports from the United States. They only comprise direct shipments. All consignments sent from the United States in steamers of the British and German lines via Liverpool and Antwerp—and these amount to millions of dollars annually—are not credited to us at all, but to those two countries respectively.

From the published tables of the national statistical office I have translated the following returns of the imports and exports in detail:

Table showing the imports from the United States.

Articles.	Quantity.	Official value.
Horses and mares ..... number	11	$2,600
Cattle ..... do	48	10,000
Olive oil ..... kilograms	11,180	3,723
Starch ..... do	98,734	11,847
Rice ..... do	1,700	153
Refined sugar ..... do	6,215	1,181
Cacao ..... do	408	102
Meats ..... do	348	292
Chocolate ..... do	117	117
Confectionery ..... do	671	411
Spices and condiments ..... do	960	194
Dry and canned fruits ..... do	8,006	985
Flour ..... do	1,562	375
Hams ..... do	6,951	3,754
Tongues ..... do	360	129
Butter ..... do	13,468	7,004
Lard ..... do	318,930	98,868
Biscuits and crackers ..... do	1,855	557
Dried fish ..... do	76,126	35,860
Cheese ..... do	5,580	2,790
Mineral waters, bottled ..... dozens	686	1,499
Alcohol and liquors, bottled ..... do	4	27
Beer, bottled ..... do	1,382	3,291
Brandy ..... liters	1,701	612
Bottled ..... dozens	100	600
Gin ..... liters	20,687	2,689
Sirups and cordials	.....	12
Rum ..... liters	1,520	608
Whisky ..... do	1,045	418
In bottles ..... dozens	480	2,026

Table showing the imports from the United States—Continued.

Articles.		Quantity.	Official value.
Champagne	dozens	20	$160
Other wines	liters	1,188	119
Cigars:			
Havana	kilograms	1,006	6,034
Other classes	do	1,385	2,770
Tobacco:			
Leaf—			
Havana	do	12,833	7,700
Other classes	do	516,438	168,425
Cut Havana	do	646	517
Shag	do	228	517
Pack cloth	do	12,846	2,579
Brabant linen	do	2,186	1,789
Sailcloth	do	407	407
Cassimeres	do	25	60
Ribbon	do	131	917
Pack thread	do	400	152
Silk thread	do	130	2,013
Spun goods, wool and cotton	do	110	84
Oilcloth	do	2,664	1,332
Cordage	do	21,681	4,326
Canvas	do	222,250	156,569
Lamp wick	do	14,096	8,554
Houselines	do	532,548	215,040
Cotton goods	do	119,395	89,883
Woolen goods	do	582	1,748
Mixed goods	do	528	1,398
Silk goods	do	20	360
Jute goods	do	1,500	1,050
India-rubber shoes	do	850	850
Chintz	do	1,036	1,036
Silk handkerchiefs	do	22	440
Ready-made clothing			1,130
Manufactured goods:			
Cotton			1,628
Linen			205
Silk			252
Oil			87,573
Sulphur	kilograms	520	5
Spirits of turpentine	do	424,799	55,822
Varnish	do	11,592	9,274
Benzine	do	74,700	11,716
Bitumen	do	31,217	8,701
Carbonate of potash	do	6,700	1,005
Carbonate of soda	do	2,320	53
Glue	do	28	13
Colors:			
In powder	do	23,037	5,265
Prepared	do	17,600	2,268
Firecrackers	do	34,227	12,015
Essences			372
Specific for curing sheep scab			5,789
Gum	kilograms	180	90
Soap:			
Common	do	4,990	998
Perfumed	do	235	94
Patent medicines			34,861
Perfumery			3,618
Resin	kilograms	3,566,099	164,497
Potash	do	3,615	542
Gunpowder and other explosives	do	1,725	690

Table showing the imports from the United States—Continued.

Articles.	Quantity.	Official value.
Pharmaceutical products		$2,754
Chemical products		19,070
Gypsum ..... kilograms	12,900	250
Ink:		
Printing and lithographing ..... do	11	5
Writing ..... do	280	28
Vaseline ..... do	2,520	1,260
Lumber:		
Pine ..... square meters	8,947,282	3,796,911
Walnut ..... do	37,206	37,206
Oak ..... do	66,377	53,097
Quebracho ..... do	6,342	1,268
Other lumber ..... do	107,389	60,152
Trunks and boxes ..... number	15,973	2,979
Wagons and carriages ..... do	190	18,832
Casks and barrels, empty ..... do	5,315	3,092
Musical instruments of wood		3,137
Boats and launches ..... number	3	2,800
Furniture		198,545
Pianos ..... number	33	9,050
Other articles of wood		117,248
Paper:		
Writing ..... kilograms	163	42
News ..... do	9,116	2,370
Wall ..... do	2,699	1,008
Wrapping ..... do	3,294	1,017
Parchment ..... reams	1,330	3,510
Papier-maché		1,421
Manufactured articles of paper		5,686
Blank books ..... kilograms	2,387	1,871
Printed books ..... do	40,604	40,604
Music ..... do	93	74
Other printed matter ..... do	2,383	2,869
Polygraphic products		1,022
Valises and satchels ..... number	521	2,170
Saddles ..... do	17	224
Harness		5,895
Other articles of leather		929
Sole leather ..... kilograms	612	1,836
Skins		8,102
Steel ..... kilograms	15,420	2,313
Anchors ..... do	6,518	652
Firearms		10,498
Wire:		
For fencing ..... kilograms	2,590	310
Other classes ..... do	4,604	2,762
Needles ..... thousands	35	460
Kitchen utensils		47,864
Nails ..... kilograms	24,271	2,892
Iron chains ..... do	180	178
Safes ..... do	16,831	3,703
Piping ..... do	7,262	872
Cooking stoves ..... do	138,471	16,967
Cutlery		1,153
Iron decorations for use in building		6,413
Mechanical tools and implements		33,961
Plows ..... number	24,409	176,345
Corn-shellers ..... do	2,484	28,114
Rakes ..... kilograms	13,089	4,300
Plowshares ..... do	75,814	24,108
Planters ..... number	213	14,465

Table showing the imports from the United States—Continued.

Articles.	Quantity.	Official value.
Champagne.....dozens...	20	$160
Other wines.....liters...	1,188	119
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Ready-made clothing.....	.....	1,130
Manufactured goods:		
Cotton.....	.....	1,628
Linen.....	.....	205
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Rakes ..... kilograms	13,029	4,300
Plowshares ..... do	75,814	24,108
Planters ..... number	213	14,465

Table showing the imports from the United States—Continued.

Articles.	Quantity.	Official value.
Reapers.....number...	1,007	$161,290
Spades, shovels, and picks.....kilograms...	193,997	48,990
Other agricultural implements.....	.....	19,905
Pumps.....number...	100	1,718
Sewing machines.....do.....	3,759	59,156
Printing and lithographic presses.....do.....	11	1,730
Presses of other kinds.....kilograms...	13,826	2,074
Other machines and motors.....	.....	226,670
Other manufactures of iron.....	.....	50,993
Materials for public works:		
Railroads.....	.....	1,119,408
Gas works.....	.....	3,193
Electric lighting.....	.....	22,460
Port works.....	.....	97,315
Tramways.....	.....	24,034
Waterworks.....	.....	343
Jewelry.....	.....	1,612
Copper and bronze, manufactured.....	.....	4,156
Tin, unmanufactured.....kilograms...	1,020	430
Scientific instruments.....	.....	2,771
Plate iron, unmanufactured.....kilograms...	137,837	11,374
Iron, manufactured.....	.....	7,117
Hoops, iron and steel.....	.....	35,757
Lead, manufactured.....	.....	250
Watches:		
Gold.....number...	3	210
Other metals.....do.....	1,605	2,538
Clocks.....do.....	2,314	3,586
Scales and weights.....do.....	1,256	4,023
Other articles of metal, manufactured.....	.....	3,321
Tiles.....thousands...	5	576
Bottles, empty.....dozens...	156	47
Glassware.....	.....	12,950
Lamp ware.....	.....	50,006
Bricks.....thousands...	98	4,534
Porcelain ware.....	.....	254
Marble and alabaster.....	.....	618
Mosaics.....kilograms...	30,220	1,481
Terra cotta, etc.....	.....	50
Precious stones, unset.....	.....	177
Grindstones.....kilograms...	1,030	124
Cement.....do.....	202,180	3,235
Plate glass.....square meters...	100	50
Candles.....kilograms...	7,350	2,205
Nut coal.....do.....	47,423,202	474,232
Coke.....do.....	212,763	3,615
Kerosene.....do.....	12,332,485	616,574
Fancy articles, dress and toilet.....	.....	4,520
Buttons.....gross...	272	794
Sponges.....kilograms...	37	259
Gutta-percha goods.....	.....	115
Toys.....	.....	1,506
Lead pencils.....gross...	85	128
Hops.....kilograms...	211	106
Straw goods.....	.....	4,826
Druggists' utensils.....	.....	17,768
Office utensils.....	.....	3,713
Various unenumerated articles.....	.....	116,021
Total.....	.....	9,301,541

In the general collapse of business which the crisis has produced, with prospects ahead of still further contraction, it seems hardly worth while to make comparisons between the imports of the present and past years; still, as showing the course of trade, I reproduce the figures of the last three years on the most important articles:

Articles.	1888.	1889.	1890.
Turpentine	$50,031	$46,252	$55,822
Starch	5,848	27,991	11,847
Agricultural implements	662,090	946,888	477,517
Lamps, gas fixtures, etc	77,915	61,136	74,662
Lumber	4,964,140	7,162,194	3,948,614
Furniture	406,248	281,827	324,843
Cotton goods	179,991	150,845	90,119
Hardware, etc	739,667	1,827,756	129,998
Kerosene	611,067	744,363	616,574
Railway materials, machinery, etc	650,663	2,782,319	1,266,753
Drugs, chemicals, etc	394,537	443,538	451,224
Hempen and woolen goods	325,954	753,647	395,213
Tobacco and cigars	58,394	120,748	185,446

The most marked decrease, it will be seen, is in the imports of agricultural implements, lumber, hardware, and railway materials and machinery as compared with those of 1889. In some lines of goods, however, the crisis appears to have produced but little effect. There was a most satisfactory beginning of an American trade in a number of articles which we have all the facilities for supplying this country with; but, until there shall be a change for the better in the inducements for making shipments to the River Plate, it is hardly to be expected that they will continue to come forward except on cash orders.

There is nothing particularly noticeable in the export trade of the Argentine Republic with the United States for the last year. It has been fairly active with a good demand during the greater part of the year, though there appears to be a diminution of $1,659,733 in the aggregate of the shipments. The items in detail, as furnished by the Argentine statistical office, are as follows:

Table showing the exports to the United States.

Articles.	Quantity.	Official value.
Hogs ..... number	1	$10
Hair ..... kilograms	496,182	198,473
Skins:		
Kid ..... do	38,012	57,018
Goat ..... do	1,134,489	794,142
Ox and cow hides:		
Dry ..... number	1,212,848	2,257,473
Salted ..... do	33,425	133,700
Hide cuttings ..... kilograms	452,768	11,319
Wool, unwashed ..... do	6,501,826	1,950,548
Peas ..... do	780	39

Table showing the exports to the United States—Continued.

Articles.	Quantity.	Official value.
Linseed.....kilograms...	1,938,029	$77,521
Corn.....do.....	501,439	10,029
Potatoes.....do.....	6,660	333
Hay.....do.....	2,000	21
Beans.....do.....	1,230	74
Wheat.....do.....	6,517,548	195,526
Sugar.....do.....	840	134
Canned meats.....do.....	3,130	282
Macaroni.....do.....	1,110	222
Biscuits and crackers.....do.....	12,955	1,165
Flour.....do.....	4,790	240
Tongues.....do.....	24	6
Butter.....do.....	582	291
Native wines.....liters...	540	97
Cheese.....kilograms...	20	6
Tallow and grease.....do.....	448,360	51,561
Jerked beef.....do.....	125	11
Tripes.....do.....	86,230	4,311
Vegetable carbon.....hectoliters...	222	222
Various cabinet woods.....	.....	11,680
Skins:		
Carpincho.....kilograms...	64,460	53,502
Nutria.....do.....	106,911	53,455
Other kinds.....	.....	11,463
Ostrich feathers.....kilograms...	22,270	22,717
Bones and bone ash.....do.....	5,261,138	84,178
Old iron.....do.....	3,180,000	79,500
Salt.....hectoliters...	967	600
Leaf tobacco.....kilograms...	60	9
Other articles of native produce.....	.....	5,080
Total.....	.....	6,066,958

It must not be inferred from the above table that the Argentine Republic has commenced the export of agricultural products to the United States. The few small items therein of this character must be put down to the account of ship stores. The statement, however, that 6,517 tons of wheat were last year shipped to the United States is a palpable error on the part of the Argentine statistical office. The mistake may have occurred from the fact that the vessels carrying the same cleared for the United States as the place of ultimate destination, whereas this portion of their cargoes may have been discharged at intermediate Brazilian ports.

By comparing the two years, it appears that there were 68,225 more dry hides shipped to the United States in 1890 than in 1889; also that the shipments of carpet wools were 1,395,562 kilograms more in 1890 than in 1889. Of goatksins the exports were 1,134,489 kilograms in 1890, against 826,684 kilograms in 1889. The shipments of linseed were only 1,938 tons in 1890, against 6,755 tons in 1889, the great bulk of the crop—30,000 tons—going to European ports. There is no significance in any of the other items.

IMPORTANCE OF A CASH TRADE.

There is no cause for surprise or regret that our aggregate trade with the Argentine Republic for 1890 exhibits so marked a reduction as that of the previous year. While the commercial outlook here continues to be so unsatisfactory and the standing of merchants is, as a general thing, so uncertain, it is evidently the part of wisdom for our traders not only to curtail their business with this country, but to keep it well in hand, limiting it, so far as possible, to such lines as they can require to be done on a purely cash basis. To continue to forward goods indiscriminately on orders, as some of our manufacturers have been doing, can only result in disappointments, if not in ultimate losses. I am able to say that thus far comparatively few Americans have been caught by the Argentine collapse, owing to the fact that, as a rule, they were too wary during the "boom" to make speculative investments down here. A number of our manufacturers, however, gave credits for shipments, which, owing to the present difference of exchange between gold and paper, it is quite out of the question for Argentine houses to meet. Who shall say when they will be able to do so?

LOSSES BY THE ARGENTINE CRISIS.

The relations of the leading nations of Europe with the Argentine Republic have been on altogether a different basis from those with the United States. On account of the peculiarly favorable facilities which for many years they have possessed for doing business with the River Plate, not only by means of their direct steam communication and international banking institutions, but also from the fact that their hundreds of commercial houses have immediate intertrade connections with those of this country and that there is a very close social status existing between the people of the Argentine Republic and Europe, the latter were quick to enter into, and take advantage of, the spirit of speculation in a thousand different forms, which during the last few years has been so rife and so insinuating in this country; and their money flowed in here in a steady stream, ready to be invested in anything and everything that offered, whether it were national and provincial bonds, mortgage *cédulas*, or stock in new banking institutions, railways, street cars, river steamers, building companies, agricultural centers, *estancias* or wild lands, or meat factories. Indeed, whatever was proposed with even the slightest plausibility or the remotest possibility of success found insinuating promoters and ready takers. Thousands of companies for hundreds of different undertakings were organized and floated with millions of capital on paper, only the first two or three installments of the stock generally being required in cash, with subscribers' notes for the balance, each one being guarantied beyond the possibility of a doubt to pay the fortunate holders the most fabulous sums of profit and gain. The United States, where the rate of interest on capital is, on an average, 2 per cent better than it is on the other continent, incredulously stood aloof from all these tempting offers, quite satisfied with smaller but surer profits nearer home; but

Great Britain, France, Germany, and Belgium "rushed in" to the tune of hundreds of millions of pounds sterling. Now that the balloon has collapsed, now that the flaming rocket has burned out and come down a stick, they find that in too many cases they have little left to show for their money except uncounted piles of worthless or discredited bonds and stock certificates. As an illustration, only yesterday I witnessed a forced sale at auction on the Bolsa of various Argentine stock certificates amounting to $1,260,000 which had been pledged as a collateral for $500,000, and the best price which could be obtained for the entire lot was $30,000. Another case came to my knowledge a few days ago where a man who had made some money in commercial pursuits purchased an *estancia* two years ago for $175,000, for which he paid $75,000 in cash and gave his note for the balance. Before the note matured the land "boom" had given way, and our friend could not find anybody to take the *estancia* off his hands at $40,000. Rather than pay the remaining $100,000 on his purchase, he finally, with $75,000 out of pocket, prevailed on the seller to rescind the sale. Hundreds of other instances, some of them even more astounding, are daily occurring where persons who made purchases of stocks and bonds can not now dispose of them at any price.

If it were merely the pushers, promoters, and agents of these schemes who were suffering from these depreciated paper securities, the case would not be so hard; at least there would be less cause for our sympathy. But in too many instances these floaters of speculative schemes, after securing their own commissions, have very carefully managed to unload on unsuspecting victims abroad—on widows with large families and limited means, country parsons with a small surplus on hand, younger sons sent out into the world with a few thousands to invest, and thousands of others who by hard work had managed to secure a possible competency—all intent on getting a larger rate of interest than they could on securities at home and believing all that was told them of the "exceptional" country of the River Plate. Trusting to the representations of these financial brokers, who were supposed to be dealing in honor and good faith with the public, each one has lost his little all. Thus the misery and poverty which have followed upon the Argentine collapse are not confined to the thousands of victims in this country, but extend to many an unfortunate family in Great Britain and on the continent of Europe.

LOAN BROKERS RESPONSIBLE FOR THE COLLAPSE.

It was in great part these loan brokers and intermediate commission men who, in league with the late Government officials, are responsible for the financial overthrow of the Argentine Republic. They were the sirens whose sweet song of the unbounded riches and phenomenal development of the country beguiled some of the staidest financiers here and elsewhere into believing the most exaggerated figures and the most improbable estimates of national and provincial resources. Even after the Argentine Government had been loaded down with a foreign debt which required over one-half of the national revenues for the service of the interest they continued to represent Argentine loans for millions upon millions of dollars more, and then

went to work to launch millions of provincial loans issued for speculative purposes for interior provinces whose revenues in some cases were so limited that they were not sufficient to meet the ordinary expenses of their local governments, and which, after receiving and squandering their share of the proceeds, defaulted in the payment of the very first interest coupons. Our especial wonder is about equally divided between the cheek and duplicity of these loan mongers and the confiding, childlike simplicity of their victims.

LIQUIDATION.

There is a partial liquidation now going on. Already thousands of those who trusted and were deceived here in the country have been sold out of house and home, and the daily papers are full of the advertisements of others whose *estancias*, palatial residences, and gorgeous furniture must go to meet their unpaid notes in bank. The rôle of the public auctioneer is the best-paying business in the country. Many who two years ago thought themselves wealthy are now being dragged through the meshes of the bankrupt courts almost without the necessaries of life. So far as the mercantile community is concerned, while they still have to sell for paper, they are working to get their accounts upon a gold basis. Many have their goods marked at gold figures and sell for paper according to the rate of the day; but even thus, owing to the violent fluctuations, they are not always able to buy foreign exchange so as to make ends meet. Much the more frequently the transaction entails a loss. So long as the paper currency, instead of being contracted in volume, continues to assume constantly increasing proportions, thus forcing still higher the premium on gold, it is not possible for merchants with heavy liabilities abroad to do much toward easing up their bill books and placing their business once more in a normal condition. I said in my last annual report that the merchants of the Argentine Republic, even some of the best of them, were struggling for existence under the bad business methods which have so long been in vogue here. They are still suffering from the effects of that system. They have allowed their ledgers to become full of uncollectible debts, and they are now being pushed to the wall by the urgent calls of their creditors abroad. The wonder is that thus far so few of the importing houses of this country have been forced to succumb to the inevitable, or rather that so large a majority have been able to bear so well the burdens which have been placed upon them by the financial exigencies of the Government. With here and there an exception, they continue, beyond anything that could have been expected, to keep well above water; and, if those who are in charge of the national finances will face about from the breakers of paper expansion, they may all be able to weather the storm. With only this dependence, however, their condition continues to be neither a very promising nor a very hopeful one.

GOLD PREMIUM.

Heretofore custom-house dues were paid in paper, with 15 per cent added for the depreciation; but since the present administration came into

office the Government has required all tariff, lighthouse, sanitary, and mole charges to be paid in gold or the equivalent in paper at the rate of the day. The present premium on gold is 275 per cent, so that the value of the Argentine national currency is 26½ cents in gold to the dollar at the date of this report. I find the following rather interesting table in the Buenos Ayres. It shows the average value of 100 Argentine gold dollars in each month since the suspension of specie payments on the 5th of January, 1885:

Month.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
January	$122	$144	$124	$145	$151	$225	$322
February	127	147	129	148	155	224	342
March	133	153	133	151	159	254	342
April	146	155	136	146	159	266	344
May	136	156	137	147	158	234	410
June	131	149	134	150	165	225	369
July	133	137	132	154	173	329	389
August	142	131	130	150	177	256	406
September	140	119	135	148	203	245	473
October	144	116	142	148	213	255	437
November	148	128	145	145	221	289	372
December	142	130	145	142	233	311	.....
Average	137	139	135	148	180	260	345

In January, 1885, the paper dollar had an average value of 80 cents; it fell to 62 cents in March, 1886; to 48 cents in September, 1889; to 30 cents in July, 1890; and touched to 22 cents in October, 1891, since which date it has risen to its present quotation of 26½ cents. It is manifest from these figures that the financial policy of the Government thus far, instead of reducing the premium on gold, has had directly the contrary effect.

COMMERCIAL RETURNS FOR NINE MONTHS OF 1891.

The commercial returns of the country for the nine months ended September 30, 1891, have just been issued from the Argentine statistical office, and in some respects they are decidedly reassuring, giving us reason to hope that if the turning point has not yet been reached, yet at least that the balances of trade against the country are henceforth to be reduced to a minimum. The first three quarters of this year, including $6,400,429 gold imported, compared with those of 1890, give the following figures:

Returns.	1890.	1891.
Imports	$115,903,947	$56,519,196
Exports	90,488,640	80,126,144

Certainly more satisfactory figures than these could hardly be expected. Here thus far during the present year we not only have the imports $59,384,751 less than for the first three quarters of 1890, but, what is still better, the exports from the country are $23,606,948 more than those for the corresponding period of last year.

The following table gives the imports from, and exports to, each country for the first three quarters of 1891:

Country.	Imports.	Exports.
Germany	$4,712,994	$9,430,093
West Indies	13,034	751,241
Belgium	5,568,983	14,770,535
Bolivia	155,628	349,803
Brazil	1,369,807	7,989,206
Chile	15,894	1,533,630
Spain	1,148,563	970,168
United States	2,595,444	2,841,126
France	6,755,099	19,328,429
Italy	3,259,435	2,251,314
Holland	92,619	25,236
Paraguay	960,294	375,307
Portugal	262,282	16,579
Great Britain	23,100,508	13,360,528
Uruguay	4,595,791	3,723,028
Countries not designated	1,912,911	2,409,921
Total	56,519,196	80,126,144

In order to better illustrate the wonderful reduction which is taking place in the volume of imports, I give the following table showing the returns in each branch of trade for the nine months of 1891, not including gold importations, compared with those of 1890:

Articles.	1890.	1891.	Decrease.
Live stock	$324,688	$122,274	$202,414
Alimentary substances	11,708,913	5,775,349	5,933,564
Liquors	8,836,995	2,779,353	6,057,542
Tobacco and cigars	1,562,342	321,776	1,240,566
Spun and woven goods	17,759,578	11,081,742	6,677,836
Ready-made clothing and confections	5,233,058	1,904,192	3,328,866
Drugs and chemicals	2,729,580	1,749,912	979,668
Lumber and its applications	6,254,293	2,092,349	4,061,944
Paper and its applications	2,578,328	1,208,946	1,369,382
Leather and its applications	1,214,434	330,238	884,196
Iron and its applications	7,430,693	3,122,694	4,307,999
Railway and other materials	30,389,491	13,279,545	17,109,946
Various metals and their applications	8,588,909	646,109	7,942,820
Glass and stone ware	3,205,942	1,006,580	2,199,362
Combustibles and kerosene	4,540,684	3,107,212	1,433,472
Various manufactured articles	3,646,019	1,595,496	2,050,523
Total	115,903,947	50,168,767	65,785,180

The Argentine Republic is certainly to be congratulated on the promise which these comparisons give of a chance for the better in the trade returns of the country. There is great cause for hope that there will in due time be an easing up of the tension which the annual balances have produced in the exchange market for years past, and that hereafter, with the decrease of imports and the increase of exports, the tide will turn and set once more in the direction of the River Plate. An actual decrease of more than $65,000,000

in gold in the imports thus far this year means that much less gold to be sent out of the country either in the form of exchange or of Argentine products. The exhibit is a most encouraging one to those who have been watching anxiously the misfortunes which the Argentine Republic has been suffering from bad business methods, aggravated by an irredeemable, depreciated paper currency.

TRADE PROSPECTS.

In regard to the prospects of trade, I have already somewhat foreshadowed my views. I do not think the conditions of business in the River Plate are such as to beget any very ardent hopes of the immediate future. The almost total collapse of credit and the general uncertainty which exists in regard to the actual financial standing of merchants are of themselves sufficient to cloud the Argentine market. These drawbacks will necessarily have a tendency not merely to reduce shipments, but to prevent the opening of new accounts. Besides this, however, the unfortunate movements of the Government in reference to financial matters, the fluctuating value of Argentine currency, which nowadays seems to be the mere shuttlecock of "bulls and bears," the impossibility of a resumption of specie payments for many years to come, the increasing difficulties of obtaining exchange, and a pervading distrust that things here have not yet come to their worst—all throw a shadow over the market and make transactions difficult, if not unsafe. The foreign trade, however, during the last few months has begun to feel very perceptibly the effects of the general depression, and to this extent the augury is a good one. If the Argentine people, even at this late day, will begin to learn the important lesson of not buying what they can not pay for, and will obey that very safe law of international trade of having the balance on the export side, there may yet be hope of better days.

GOLD REMITTANCES TO THE RIVER PLATE.

In November last the value of the gold dollar went up to 450; but since then there have been heavy shipments of gold to the River Plate for the purpose of moving the wool clip and the wheat harvest, the tendency of which, of course, has been to temporarily weaken the price of gold. On this subject I find the following paragraph in the European Mail of a recent date:

A combination, including all the more powerful London interests connected with the Argentine Republic, has resolved to take steps for the restoration of commercial credit in Buenos Ayres. Information from all sources shows that, despite a heavy wheat crop and a big wool clip, the shipments of which must create credits in Europe in favor of Argentine producers and exporters, the situation has been in no way ameliorated. It is proposed to send moderately large remittances of gold to Buenos Ayres, probably £100,000 at a time, which are to be employed to revive the bill market there. An exporter of produce can not now draw against his shipments, owing to the entire disappearance of commercial credit. Were nothing done to restore this, the big crop and the wool clip would have to reach Europe before the exporter could finger a penny of its value. The gold to be sent out will be utilized to negotiate bills of lading on cargoes of wheat and wool, and thus the Argentine Republic will get the benefit of the gold for which its products sell some months earlier than would otherwise be the case.

These remittances are now being received here; and, inasmuch as exporters, on the arrival of the gold, at once convert it into paper for the purpose of making purchases, there has been a considerable increase in the value of the paper dollar. But, so far as it is possible to take in the situation and connect it with the general course of affairs, there seems to be no good ground to hope that gold will be materially lower than it is at the present time. Indeed, when the summer is ended and the harvests of wool and grain have been shipped out of the country, it is more than probable that gold will rebound from its present price and find a still higher figure, especially in view of the issue of additional paper currency by the new Bank of the Argentine Nation.

THE CHICAGO EXPOSITION.

The people of the River Plate are looking forward with much interest to the great American exposition which is to be held in Chicago to commemorate the four hundredth anniversary of the discovery of the western hemisphere. The Governments of Paraguay, Uruguay, and the Argentine Republic have all taken the preliminary steps to be represented; though it is feared, owing to the present financial condition of all three of these republics, that they will hardly feel able to make such provision for a thorough illustration of their products and resources as under other circumstances they would be glad to do. I have not heard the amounts which Paraguay and Uruguay have set apart for this purpose, but the Argentine Republic has thus far appropriated $100,000. It is presumed, however, that this sum will be considerably increased by the next Congress. Mr. Victorica, superintendent of the agricultural department, and Mr. Lex Kleitt, who was in charge of the Argentine section of the late Paris Exposition and earned so much credit for his country, have been named commissioners to Chicago; and it is sufficient to say that the interests of the Argentine Republic could not be placed in better or more capable hands.

STEAM LINE TO THE RIVER PLATE.

There are also great expectations, based on the recent law of our Congress, by which a line of fast steamers, under the auspices of the Post-Office Department, is provided for to make trimonthly trips between the River Plate and the United States. If this line can be put on before the opening of our great exposition, thus insuring a through service without the discomfort and annoyance of a change of steamers, the effect will be to induce very many Argentines to make a visit to the United States, and thus tend to open new and more intimate commercial relations between the two countries. The trade possibilities which would result from thus bringing New York and Buenos Ayres closer together can hardly be overestimated.

DISTRESSED AMERICANS IN THE RIVER PLATE.

I have had frequent occasion to caution Americans from trying their fortunes in this part of South America unless they came with capital or unless

they had made previous arrangements for permanent employment. I have especially advised them not to think of venturing down here, even for the purpose of prospecting, unless they brought with them money sufficient to get them back home again. It is to be regretted that, in the face of all this, in spite of the crisis, in spite of the depression of business, in spite of the fact that the country is now full of people who have been hopelessly thrown out of employment, the number of arrivals from the United States of impecunious seekers after fortunes has been quite as large as usual during the past year. It is unnecessary to say that, without money and without friends, without even being able to speak the language of the country, they have come to a great deal of misery and want, suffering, in many cases, for the bare necessaries of life. The few Americans located here have been overwhelmed with calls for charitable assistance. They have done what they could. They have sent back home such as they could obtain passages for, and have done something toward relieving the sufferings of those who still remain. While, however, the present unfortunate state of affairs continues in the Argentine Republic, it should be conspicuously published throughout the United States that, in spite of the rose-colored views which transient visitors and temporary sojourners take of the situation here, the River Plate is at the present time no place for Americans without money who are seeking to better their worldly prospects.

OPPORTUNITIES FOR INVESTMENT.

At the same time it is my opinion, owing to the present great depreciation in the value of landed property, on top of the great depreciation in the value of the circulating medium, that now is an exceptionally safe time to make investments in Buenos Ayres city buildings or in Argentine *estancia* lands. Wonderful bargains are in the market every day, and a very moderate sum of money, with gold at the present high premium, will secure valuable properties, both in town and in the interior, in cases which are constantly recurring where the owners, brought to grief by the crisis, are compelled to realize. The Herald, of this city, commenting on the opportunities which are thus offered, says:

> Of all times the country ever knew, there was never one in which the capitalist who will bring here his gold and make as good investments as are offered could make so much or so surely without any more risk than to buy property in Threadneedle or Wall streets. Money commands from 1 to 2 per cent a month on the best productive city property on a margin of more than half the lowest valuation that even the lender would make. This is an investment in which the capitalist does not care to take the chances of buying property for a rise. Let us suppose a man should bring here $100,000 in gold, or £20,000. This sum, converted into paper, would bring $400,000. This, at 1 per cent a month, would yield $1,000 a month, and this could be invested in small properties, which, in four or five years, will be worth three or four times as much as they could now be bought for. In the purchase of property one can now buy for half the sum they were sold for when gold and paper were nearly equal, and to which they will in a few years return.
>
> To those who will invest in faith in this country fortunes will surely come, provided, of course, that wisdom and care are taken in the matter. It is marvelous that with paper money

worth only 25 cents on the dollar properties can be bought that have commanded as much in gold, and will certainly do so again, so that paper money now invested can be converted into gold at par by waiting a few years. Bad as matters are, the Argentine Republic will emerge from them because she is the richest country in the world in natural resources, and even the bad government which we have had and the load of debt it has left us can not cripple us for long, and the world is to be astonished at the rapidity of the rebound that will follow these times of depression.

It is hardly necessary to add that large amounts of English and continental capital are during these days being sent out here to be invested in real estate in the Argentine Republic, and I think the opportunities for such investments will increase as the liquidation which is now going on becomes more urgent and imperative.

ARGENTINE TARIFF FOR 1892.

The customs tariff of the Argentine Republic for 1892, just enacted by the national Congress, presents many modifications and changes compared with those of previous years. While raw materials, breadstuffs, and various necessaries of life show a decrease in the rate, the great bulk of the articles imported into the country have a marked increase of duty placed upon them, the object of the Government, on account of the large demands which will be made upon the treasury, being to produce as much revenue as possible from foreign importations. The following is a translation of the new tariff:

ARTICLE 1. All foreign merchandise imported for consumption shall pay a duty of 25 per cent on its valuation in deposit, except the following articles:

I.—Objects of art and fancy, carriages (finished or unfinished), harnesses and decorations, buckles and bits, bridles, ready-made clothing, confections, hats not under specific duty, perfumery, boots and shoes and leather goods in general, furniture (put together or in pieces), chocolate, cheese, lard; fish, meats, and fruits (preserved); dried fruits, all classes of tobacco, all kinds of cigars and snuff, which shall pay a duty of 60 per cent.

II.—Arms and munitions, powder, cartridges, cartridge cases, covers for books, mosaics, wood matches and firecrackers, which shall pay a duty of 50 per cent.

III.—Silk and mixed goods and cloths in general, laces and trimmings, silk cordage and gimp, inlaid work, brass wire, Paris points, leather (unworked), prepared yerba mate, which shall pay a duty of 40 per cent.

IV.—Paving stones, rope and cordage, and trotting horses, which shall pay a duty of 30 per cent.

V.—Linseys, linens, bramants, domestics, Oxfords, embroidery, bindings, satinets, fringe, corduroy and cottons, chintz goods, calicoes of all kinds, rice, farina, and pine and spruce lumber (unworked), which shall pay a duty of 15 per cent.

VI.—Iron and steel not galvanized (in sheets, ingots, and bars), all kinds of printing and writing paper, and copy books, which shall pay a duty of 10 per cent.

VII.—Canvas and pack cloth, jewelry, sewing and embroidery silks; presses, utensils, and materials for printing (except types); lithographic presses, machinery of all kinds for agricultural or industrial purposes, sewing machines and needles for the same; steam, gas, and electrical engines; detached pieces of machinery for repairs, twine and wire in carrots for binding, sulphuric acid, sulphate of lime, tin (in sheets), tin composition, lead, zinc in ingots and bars, iron and steel in bars, which shall pay a duty of 5 per cent.

VIII.—Precious stones, unset, which shall pay a duty of 2 per cent.

IX.—The following specific duties:

(1)	Starch	per kilogram...	$0.09
(2)	Coffee	do.....	.08
(3)	Macaroni	do.....	.09
(4)	Crackers and biscuits	do.....	.15
(5)	Flour, corn meal, and shelled corn	do.....	.05
(6)	Tea of all qualities	do.....	.25
(7)	Sugar:		
	Unrefined	do.....	.07
	Refined	do.....	.09
(8)	Wine:		
	Common, in casks	per liter...	.08
	Fine, in casks	do.....	.25
	In bottles, of whatever quality	do.....	.25
(9)	Beer or cider, in bottles	do.....	.15
(10)	Alcohol:		
	In casks (not exceeding 30°)	do.....	.15
	In bottles	do.....	.30
(11)	Brandy, gin, anise, kirsch, bitters, etc., in casks	do.....	.25
(12)	Liquors of all kinds and bitters in bottles	do.....	.30
(13)	Kerosene	do.....	.03
(14)	Stearine and paraffin candles	per kilogram...	.15
(15)	Stearine	do.....	.14
(16)	Playing cards	per gross...	40.00
(17)	Wax matches	per kilogram...	.50
(18)	Straw paper or other varieties for bags or for furring and colored paper	do.....	.15
(19)	Hats:		
	Silk	each...	2.50
	Felt	do.....	1.00
	Wool	do.....	.50
	Cases for hats	do.....	.60

All articles of weight which have two coverings shall pay a duty on the immediate covering, except tea, which shall pay on the net weight.

ART. 2. There shall be laid the following additional duties, the product of which is destined exclusively to increase the funds of the conversion office and is set apart to redeem and cancel the national bank-note circulation:

(1)	Alcohol or alcoholic drink or liquor comprehended in sections 10 to 12 of article 1	per liter...	$0.05
(2)	Common wine in casks, exceeding 18° (1 cent per liter for each degree of excess)	per liter...	.01
(3)	Havana cigars	per kilogram...	4.00
(4)	All other cigars	do.....	2.00
(5)	Havana tobacco in the leaf	do.....	2.00
(6)	Havana tobacco, cut	do.....	3.00
(7)	Other tobacco, cut or in the leaf	do.....	1.00
(8)	Paraguayan tobacco, in the leaf	do.....	.15
(9)	Paraguayan tobacco, cut	do.....	.25
(10)	Cigarettes in general	do.....	2.00
(11)	Snuff	do.....	2.00
(12)	Cards	per gross...	20.00
(13)	Wax matches	per kilogram...	.30
(14)	Perfumery in general and pharmaceutical specialties shall pay 25 per cent ad valorem as additional duty.		

ART. 3. The following articles shall be imported free of duty, to wit: White sand (de Fontainebleau), plows; iron and steel wire to Nos. 12 and 13, respectively; breeding animals (whether sheep, cows, bulls, hogs, or horses), cotton thread for looms, quicksilver, sulphur (crude), boats in general (rigged or unrigged), drills for mining up to 75 centimeters in length, benzine, stone coal, charcoal, iron pipes (not galvanized) of at least 75 millimeters in diameter, wooden and iron casks for tunning, frames for casks of more than 2 kilograms, corks, shooks for barrels, specifics for curing scab in sheep (including tobacco rendered useless for ordinary consumption); cases, boxes, etc., for packing prepared meats; fresh fruits, dynamite, guides and torches for mines, glycerine for industrial purposes, old iron, books in paper or rustic binding, schoolbooks, locomotives, fire brick, hops, steam engines, machinery and materials for gas and electric lights, corn on the cob, furniture and tools of immigrants, coined money, iron and steel materials for tram and railway tracks, machinery for the preparation of meats for export by any modern system, engines and machinery for new industries to be established in the country and the materials for the same, nitrate of soda for industrial purposes, gold in dust or grains or bars, vegetable fiber for the manufacture of paper, fresh fish, silver in bars or *piñas*, plants, especial powder for mines, rabbits' hair, wheels for railway or tram cars, seeds for planting, wheat, molding earth, school furniture, utensils and supplies asked for by the provisional governments or school boards, and objects used in religious worship asked for by ecclesiastical prelates.

ART. 4. No article of importation shall be exempt from duty which is not expressly named in this law, especially in the cases of concessions granted by Congress.

ART. 5. The following products and manufactures shall pay an export duty of 4 per cent ad valorum, to wit: Animal oil, horns and horn piths, jerked beef, bone ash, hair, hides and skins of all kinds, hide cuttings, bones, wool (washed or unwashed), ostrich feathers, and grease.

Old iron shall pay an export duty of $25 for each 1,000 kilograms.

The other articles of the tariff law are explanatory or administrative.

By a supplemental law all articles of importation for consumption shall pay an additional duty of 1 per cent on the assessed value.

DUTIES ON AMERICAN GOODS.

Comparing this tariff with that of 1891, it appears that the duty on American lumber is increased from 11 to 16 per cent on its valuation in deposit. The duty on kerosene oil is reduced from 6 cents to 4 cents per liter. The duty on furniture remains at 60 per cent on the valuation, and on agricultural implements and machinery it remains at 6 per cent. Playing cards, which last year paid a duty of $40 per gross, are now to pay $60 per gross. There are no other important changes in articles of American trade.

TARIFF OF VALUATIONS.

The tariff of valuations for 1892 has not yet been published, so that it is not yet possible to know what will be the full effect of the new tariff. It is understood, however, that there will be a very appreciable increase in the custom-house valuations; but, even at the valuations of last year, it would appear that some lines of American goods even now pay pretty high duties. For instance, wood-seat chairs, which cost $3 per dozen in New York, are valued in the custom-house here at $5.50 per dozen, which, at 61 per cent, makes the duty $3.35, or 35 cents more than the invoice cost of the chairs;

cane-seat chairs, which cost $4.80 per dozen in New York, are valued in the custom-house here at $10 per dozen, which, at 61 per cent, makes the duty $6.10, or $1.30 more than the invoice cost of the chairs; ordinary rocking chairs, which cost in New York $14.50 per dozen, are valued in the custom-house here at $25 per dozen, which, at 61 per cent, makes the duty $15.25, or 75 cents more than the cost. All other American furniture pays a duty in the same proportion, say about 125 per cent on the cost. American white-pine lumber, which costs $18 per 1,000 feet in the United States, is valued in the custom-house here at $38 per 1,000 feet, which, at 16 per cent, makes the duty $6.10 on each 1,000 feet. Kerosene oil, which in New York is purchased for 93 cents per 10 gallons, or say 38 liters at 40 cents per liter, pays here a duty of $1.52 for each 10 gallons, or 50 cents more than the prime cost of that quality of oil. Brandreth's pills, which cost $10.70 per gross in New York, are valued in the custom-house here at $42 per gross, which, at 51 per cent, makes the duty $21.42 per gross, or $10.72 more than the cost. All other American preparations have a proportionate valuation put upon them in the custom-house here. American mowing machines, which cost $45 in the United States, are valued in the custom-house here at $70 each, which, at 6 per cent, makes the duty $4.20 on each machine; reapers and binders, which cost $80 and $115, respectively, in the United States, are valued here at $200 each, which, at 6 per cent, makes the duty $12 on each one of these machines. I could extend this enumeration of articles, but it does not seem necessary.

It will be observed that under the Argentine tariff for 1892 nearly all the important exports from the country are required to pay an export duty of 4 per cent on their custom-house valuation, which must materially tend to increase their price in foreign markets.

WAREHOUSE CHARGES.

From the 1st of January, 1892, the following are the charges fixed for bonding and warehousing goods:

(1) All articles which are charged according to their weight shall pay at the rate of 5 cents per month for each 100 kilograms gross weight.

(2) All articles which are charged according to their volume shall pay at the rate of 3 cents per month for each 100 cubic decimeters.

(3) All articles which are charged according to their literage shall pay at the rate of 3 cents per month for each 100 liters, according to the capacity of the cask.

(4) All articles which are charged according to their intrinsic value shall pay at the rate of 25 cents per month for each $100 of value.

(5) Powder and other explosives shall pay 15 cents per month for each 100 kilograms gross weight.

(6) The Executive shall determine what articles shall be included in these different classes, and all warehouse charges must be paid in gold or its equivalent.

LIGHTHOUSE DUES.

All lighthouse dues in the Argentine Republic for the year 1892 must be paid according to the following tariff:

(1) All vessels which come from outside the capes San Antonio and Ste. Mary shall pay on their arrival a duty of 7 cents on each registered ton.

(2) All vessels of less than 5 tons register navigating inside the capes shall pay 1 cent for each ton upon entering port and 1 cent upon clearing.

(3) All vessels in the coasting trade shall pay 2 cents monthly for each registered ton.

(4) Vessels entering or clearing in ballast shall pay one-half of the above charges.

(5) Vessels entering in distress shall not be required to pay light dues, provided they neither discharge nor receive cargo.

(6) All light dues must be paid in gold or its equivalent.

SANITARY VISITS.

(1) Every merchant vessel proceeding from a foreign port and entering at any port of the Republic shall pay for sanitary visit during the year 1892 at the rate of 1 cent for each registered ton.

(2) Vessels proceeding from infested ports and which do not produce a clean bill of health shall pay double the above rate.

(3) When vessels enter in ballast and without passengers the charge for the sanitary visit shall be one-half of the above rates.

(4) Vessels which touch at ports on the Atlantic Ocean south of Chupat are excepted from sanitary visits.

HYDRAULIC CRANES.

For the use of the hydraulic cranes of the port of Buenos Ayres from the 1st of January, 1892, the charge shall be at the rate of 35 cents per ton or fraction of a ton, to be audited by the custom-house in accordance with the bills of lading, which must be furnished on the arrival of each vessel. And these charges must be paid in gold or its equivalent.

PORT AND MOLE DUES.

For the year 1892 all merchant vessels which enter at the port of Buenos Ayres shall pay the following port charges:

(1) Entrance dues as follows:

Vessels of 3 tons register up to 50 tons	per ton...	$0.04
Vessels of 51 tons register up to 100 tons	do.....	.05
Vessels of 101 tons register up to 150 tons	do.....	.10
Vessels of 151 tons and more	do.....	.20

Steamers and vessels in ballast shall pay one-half of these rates.

(2) For the use of the moles: Vessels of 3 tons register up to 100 tons, 13 cents per day for each 10 tons or fraction of 10 tons; vessels of more than 100 tons register, 7 cents per day for each 10 tons or fraction of 10 tons. Vessels which leave the port to complete their cargo in the outer roads are also liable to this tax.

(3) There shall be excepted from these charges all vessels which enter the port in distress, provided they neither discharge nor receive cargo; all coasters or whaleboats during a storm in the river; vessels which enter for the purpose of being docked during the time of their dockage; and vessels which enter for repairs, not exceeding fifteen days.

All these charges must be paid in gold or its equivalent.

The port and mole charges of the city of La Plata, 30 miles south of Buenos Ayres, where many ocean-going vessels now enter on account of the depth of water, quite correspond to those of Buenos Ayres.

ARGENTINE POSTAGE RATES.

The Argentine Congress at its late session made a considerable increase in the rates of postage on letters and papers sent out of the country. From the 1st of January, 1892, the charges will be as follows:

Description.	Rate.	Description.	Rate.
Letters of 15 grams or fraction	$0.12	Samples up to 200 grams	$0.10
Postal cards	.04	Newspapers and other printed matter to 50	
With reply paid	.08	grams or fraction	.02
Circulars, etc.:		Letters, certified or registered:	
Up to 250 grams	.10	With receipt	.16
Each 150 grams additional	.02	Without receipt	.10

The prepayment of postage is optional, but double rates are exacted on mail matter not prepaid.

REVENUE AND EXPENDITURES.

The minister of finance estimated the national revenues for 1890 at $74,370,000. They amounted to $73,150,856, against $72,903,756 in 1889. The following table gives the different items of revenue:

Sources of revenue.	Amount.	Sources of revenue.	Amount.
Importations	$47,546,785	Central Argentine Railway stock	$428,370
Warehousing	1,554,227	National Bank stock	1,000,000
Stamped paper	3,806,482	Tax on bank notes	848,507
Stamps	203,758	Port and mole dues	766,820
Licenses	1,592,999	Consular fees	990
Land taxes	4,246,266	15 per cent on payments of customs	
Post-office	1,432,524	dues in paper	2,877,750
Telegraphs	753,286	Sundries	5,782,077
Lighthouses	175,282	Total	73,150,856
Sanitary visits	67,156		
Judicial deposits	67,577		

This is the largest revenue ever realized in the history of the country. As a matter of some interest, I give below the course of revenue receipts since 1870:

Year.	Amount.	Year.	Amount.
1871	$13,404,920	1881	$22,057,500
1872	18,778,363	1882	26,655,105
1873	20,965,585	1883	30,713,348
1874	17,077,817	1884	37,236,820
1875	17,779,720	1885	38,550,972
1876	14,036,424	1886	46,634,361
1877	15,318,264	1887	56,882,057
1878	19,066,999	1888	57,110,734
1879	21,660,863	1889	72,903,756
1880	20,247,487	1890	73,150,856

The appropriations for the support of the General Government for the year 1890, according to the figures of the national statistical office, were as follows: For ordinary expenses, $51,649,624; for extraordinary expenses, $16,172,260; total, $67,821,884. They were distributed as follows:

Department.	Ordinary.	Extraordinary.	Total.
Interior	$10,711,146	$5,466,260	$16,177,406
Foreign affairs	2,504,280	96,000	2,600,280
Treasury	16,548,893	9,441,000	25,989,893
Justice and education	8,518,026	999,000	9,517,026
War	9,507,839	.....	9,507,839
Marine	3,859,440	170,000	4,029,440
Total	51,649,624	16,172,260	67,821,884

These tables would indicate an apparent surplus of $5,328,972 over the expenditures of 1890; though, according to the minister of finance, owing to the unforeseen expenditures on account of the revolution, there was an actual deficit of $19,689,604 in currency, which, calculated at 320 per cent, is stated by him to be $6,153,001 in gold.

The estimated receipts for the present year (1891), according to the report of the minister of finance, are placed at $19,252,500 in paper and $29,760,000 in gold, as follows:

Sources of revenue.	Paper currency.	Gold.
Imports	.....	$26,000,000
Exports	.....	2,680,000
Consular fees and sundries	.....	420,000
Warehousing, licenses, stamped paper, land taxes, post-office, telegraphs, light-houses, etc	$10,142,500	.....
Internal-revenue taxes on alcohol, beer, matches, etc	9,110,000	.....
Taxes on foreign banks, live stock, etc	.....	660,000
Total	19,252,000	29,760,000

Against these estimated receipts for the present year, the following are the appropriations made by Congress:

Description.	Paper.	Gold.
For the ordinary expenses of the Government	$39,413,373	.....
Bank circulation to be retired	15,000,000	.....
Buenos Ayres sewerage and waterworks	.....	$2,545,709
Interest on bonds of guarantied banks	.....	4,103,780
Various items	.....	1,324,740
City port works	.....	1,576,000
Interest on new city waterworks loan	.....	900,800
Total	54,413,373	10,453,229

So that, according to the minister's estimates, at the end of 1891 the Government is expected to have a surplus of $19,306,772 in gold and a de-

ficit of $35,160,873 in currency. The latter, reduced to gold by the minister at 320 per cent, amounts to $10,987,772, which, subtracted from the above gold balance, leaves a surplus of $8,318,000 in gold. From this, however, is still to be deducted $6,153,000 in gold, the amount of the deficit of 1889.

Thus the Government counts upon a surplus of $2,165,000 in gold at the end of 1891. By a similar process of estimates the minister has also calculated that at the end of 1892 there will be a surplus of $10,190,227 in gold and at the end of 1893 a further surplus of $8,100,557; thus at the end of the three years he counts on a balance of $20,456,782 in gold in the national treasury to meet deferred interest on the public debt.

It remains to be seen how far the minister's expectations in this respect will be realized.

ARGENTINE BONDED INDEBTEDNESS.

The total bonded debt of the Argentine Republic on the 31st of December, 1890, according to the report of Señor Latzina, chief of the national statistical office, was as follows:

Internal debt	$227,553,011
Foreign debt	128,209,130
Total	355,762,141

I have detailed in my reports year after year the processes by which, in a state of profound peace and general prosperity, the Argentine Republic, with its scant 3,000,000 of population, has managed to run up a debt so utterly out of proportion to its resources. It is not worth while to recapitulate them at the present time, but, as a matter of general curiosity and some historical interest, I give below the figures of Argentine indebtedness in their annual progression for the last twenty-one years:

Year.	Amount.	Year.	Amount.
1870	$47,505,986	1881	$107,075,511
1871	84,265,110	1882	124,112,684
1872	80,012,729	1883	128,047,256
1873	78,480,297	1884	122,503,098
1874	77,183,464	1885	118,381,896
1875	82,877,423	1886	117,153,961
1876	86,813,567	1887	141,727,849
1877	82,230,897	1888	227,462,571
1878	80,649,083	1889	295,195,833
1879	77,738,976	1890	355,762,141
1880	86,313,102		

These were the figures at the end of December, 1890. Since then the calamities which have fallen upon the nation by the reckless mismanagement of its finances have required a still further increase of its bonded debt. I do not know that I can give the amount exactly, but at the beginning of the year the Government made an internal loan of $6,000,000 in paper and

later on a "patriotic" internal loan of $42,000,000, also in paper; and it likewise completed a foreign *moritorium* loan of $75,000,000 in gold. So that, reducing the paper loans to gold, the present figures of the Argentine public debt are about as follows:

Total amount, December 31, 1890	$355,762,141
Internal loans, 1891, reduced to gold at 350 per cent	18,571,000
Foreign loan, January 23, 1891	75,000,000
Total indebtedness	449,333,141

THE MORITORIUM LOAN.

The latest foreign loan of $75,000,000, as I have already stated, was made under very peculiar circumstances. It was found that the Government was not in funds to meet the service of its foreign debt and was on the eve of a general default in the payment of accrued interest, when a syndicate of London bankers, in their zeal for the fallen house of Baring Brothers, conceived the plan of a *moritorium* loan, that is to say, of a loan to meet the accrued and accruing interest for the years 1891–'93 on such portion of the Argentine debt as is held in England. By the terms of the contract the Argentine Government has received no money; but the bonds were placed in the hands of its agents, Messrs. J. S. Morgan & Co., who, for a total commission of 3 per cent, agree to deliver the bonds in proper amounts on the presentation of outstanding interest coupons. For the payment of these bonds the duties on importations are mortgaged or pledged by the Argentine Government, and the coupons are receivable at their face value in the payment of custom-house duties. It is thus that the interest, in great part, of the Argentine foreign debt is tided over temporarily, the Government at the end of the *moritorium* expecting to be in sufficient funds from surplus revenue to resume the payment of its interest as it accrues.

INDEBTEDNESS OF THE PROVINCES.

So much for the indebtedness of the National Government. The provincial governments have also contracted a large amount of indebtedness at home and abroad, and the holders are also clamoring for their interest. In my last annual report I stated that, owing to the bankrupt condition of the provinces, the National Government had undertaken to provide for the service of the interest; and I gave the terms of the law passed by the National Congress, whereby the National Government was to take over such loans and convert them into 4½ per cent national bonds on certain conditions therein specified. Nothing has yet been done to carry this law into effect, owing to various questions of a political character which have entered into the discussion. The exact amount of indebtedness which has been contracted by each province it is somewhat difficult to ascertain. According to Señor Agote, the Government accountant, the debts of the provinces amounted in 1887 to $193,577,582. A statement—not official, however—

has been lately made bringing the accounts down to the present time, which, reduced to gold, are as follows:

Province of Buenos Ayres	$41,760,000
All the other provinces	81,200,000
Total	122,960,000

MUNICIPAL INDEBTEDNESS.

Then, on the heels of this, comes the bonded debts of the cities of the Republic, which, reduced to gold, are as follows:

Buenos Ayres	$13,100,000
Rosario	6,500,000
Cordoba	1,000,000
Total	20,600,000

FLOATING DEBTS.

How much more is to be put down to the account of floating debts I may not venture to say, but the latest returns state it as follows:

The nation	$10,000,000
Province of Buenos Ayres	47,000,000
City of Buenos Ayres	14,300,000
Total	71,300,000

The above sums, however, are in currency. Reduced to gold, they amount to about $15,700,000. The debts of the city of Buenos Ayres, as it is under the national jurisdiction and government, are a direct charge on the nation.

NATIONAL GUARANTIES.

I have already in another place referred to the obligations of the nation to the various guarantied railways. The sum annually required for this purpose is $4,624,474 in gold, and this sum will be further increased when certain lines now in process of construction shall be completed.

The National Government has also given its guaranty to congealed mutton establishments, to sugar refineries, to paper mills, and to various other industries, but what amounts are annually required for these it is not possible to state with any accuracy. They help, however, very sensibly to swell the liabilities of the National Government.

NATIONAL AND PROVINCIAL CÉDULAS.

Besides these burdens of bonded and other indebtedness on the part of the nation, the provinces, and the municipalities, there is another form of Argentine indebtedness frequently heretofore mentioned by me in my reports, which is just now especially attracting attention on the part of the public. I refer to the bonds, or *cédulas*, which have within the last few years been issued on the security of landed property by the National Hypothecary Bank and by the Hypothecary Bank of the Province of Buenos Ayres, and for the payment of the interest on which the nation and the province

are respectively responsible. The amounts of these *cédulas*, when we consider the limited development of the country and the present condition of its available resources, approach almost to the fabulous. While there is no official information on the subject of a very recent date, I learn from reliable sources that the mortgage bank of the province and that of the nation figure in the *cédula* business about as follows:

Issued by the Hypothecary Bank of the Province	$320,000,000
Issued by the National Hypothecary Bank	204,000,000
Total	524,000,000

The issues of the provincial bank are based on the mortgage of real estate in the province of Buenos Ayres, those of the national bank on real estate in all the different provinces and territories.

At the beginning of 1891 the provincial *cédulas*, which were originally put on the market at prices ranging from 80 to 70 cents to the dollar, were worth only about 45 cents in paper. They are now worth 33 cents in paper, equal to about 9 cents in gold to the dollar. The province has already defaulted in the payment of the interest on its *cédulas*, and it is now issuing to those who will receive it a certificate, very neatly engraved, showing the amount of interest due, and for the ultimate payment of which it holds itself responsible.

The national *cédulas* when they were first issued were at a premium. At the beginning of 1891 they were quoted at 98 cents to the dollar, and they are now worth about 65 cents. When issued they represented gold, and perhaps they are still considered as gold securities. The National Government, by special provision of Congress in an extraordinary issue of $25,000,000 in paper, has thus far managed to meet the interest on these *cédulas;* but this source of supply is exhausted, and now, by a law just passed, the cash service on its gold coupons is postponed for two years. During this time the Government "will pay the interest of the said *cédulas* in public gold bonds bearing 5 per cent interest and 1 per cent cumulative amortization, which shall be given out at par."

These *cédulas* have been a favorite security, on account of the high interest they bear. Besides the large amounts held in this country, there are many millions also held in Great Britain and on the Continent. The general collapse which has overtaken them, the impossibility of disposing of them except at a ruinous loss, and now the suspension of the payment of interest on them, except in bonds and certificates, which are quite unsalable on the market, must be productive of much hardship and misery to the unfortunate holders. Indeed, it is one of the most distressing features in connection with the present crisis that this *cédula* business has brought ruin not only upon speculators, but upon countless families and widows and orphans who had put their whole capital in this unlucky stock. At a moderate calculation, considering the prices at which these *cédulas* were issued and the value which is put upon them now, the people have suffered a loss from their depreciation of not less than $200,000,000 in gold.

Of course, it would be for the interest of these mortgage banks, when defaults occur, to sell the property mortgaged; but, unfortunately, in the present collapsed condition of landed property in the Argentine Republic it would be impossible to effect sales at even 5 per cent on the amounts for which it was mortgaged, so exaggerated was the valuation which was put upon real estate before the crisis. Indeed, in not a few cases, these lands, located in distant and unpopulated parts of the Republic, are at the present time quite valueless; and yet three years ago they were hypothecated for millions of dollars.

BANK-NOTE CIRCULATION.

A statement of the amount of bank notes now in circulation under the general banking law has been made public by the Señor Latzina. It is dated March 31, 1891. I give the following abstract:

Banks.	Circulation.	Banks.	Circulation.
National bank	$90,090,533	Provincial banks—Continued.	
Provincial banks:		Santiago	$3,766,470
Buenos Ayres	57,928,200	Catamarca	2,390,491
Cordoba	15,553,796	Corrientes	3,163,500
Tucuman	4,000,000	San Luis	630,000
Mendoza	3,000,000	Bank of Buenos Ayres	1,500,000
San Juan	1,656,000	English Bank of Rio de Janeiro	850,000
La Rioja	3,000,000	Hypothecary Bank (treasury notes)	25,000,000
Salta	4,432,000	City of Buenos Ayres (treasury notes)	10,000,000
Entre Rios	8,544,000	Total	249,914,990
Santa Fé	15,091,000		

To the above must be added $7,000,000 recently issued by the Government in fractional currency, thus making a total of $256,914,000 of paper circulation.

Every Argentine bank in the country has in all manner of ways most grossly violated the provisions of the general banking law, and it was understood some time ago that they were to be wound up and retired from business; but nothing has been done in this direction, and they still keep on their way rejoicing, in spite of the fact that they have not a cent available to meet the demands of depositors.

THE BANK OF THE ARGENTINE NATION.

A further increase of the paper circulation of the country is to appear in the form of notes of the Bank of the Argentine Nation, which has just been chartered by the Argentine Congress to take the place of the National Bank, which, having exhausted its resources in dishonest practices, is now being wound up and liquidated. The Bank of the Argentine Nation is in every respect a unique institution. It is difficult to say whether it is an official or a private bank. While it seems in its form to be a private institution, yet it is "clothed with the same rights and privileges as those which were possessed by the National Bank," and it is "to take over the business of that bank." Its capital is $50,000,000 currency in five hundred thousand shares

of $100 each, "to be offered for public subscription," though "persons holding shares of the National Bank shall be preferred." The board is to comprise fifteen directors to be elected by the shareholders and a chairman to be appointed by the Government; but to organize the institution the Government has authority to appoint provisional directors. "This provisional board delivers to the conversion office its bond for the amount of five hundred thousand shares, to be afterwards changed into shares to bearer; the conversion office thereupon advances $50,000,000 on these shares to the bank in money of the present currency," and "the nation guaranties the deposits until the shareholders elect their board." As soon as the new bank is organized the conversion office is to offer the shares to the public in consecutive series of $10,000,000 each, and it "shall burn instantly the sums in paper money received for shares, crediting the same to the account of the issue advanced to the bank." There are various special provisions and safeguards for the administration of the bank which seem very excellent, and it may be that, although the institution has already received a very large amount of unfavorable criticism, it will prove to be a very important factor in the arrangement and settlement of the financial affairs of the country. Certainly the names of the provisional directors are a guaranty that the institution will not be run in the interests of political vagrants. The following from the Buenos Ayres Standard very well expresses the public opinion in reference to this new bank:

Everything connected with this new bank is remarkable. It starts without a share of capital being subscribed, with a president and board of directors who, when the scheme was first mooted, opposed it "tooth and nail;" in premises not its own, nor yet even leased to it; and with a new issue of paper money, which the whole world admits is the curse and ruin of the country. In any other country such an institution would not have even the ghost of a chance of success; but so exceptional is this market, so frequently are results the most successful, yet contrary to the soundest judgment and the best experience, that we, for one, begin to think it is possible, under good management, that this Banco Nacion Argentina may yet prove the most successful of all. In the history of the old Provincial Bank of Buenos Ayres we find many circumstances akin to those that surround the starting of the Banco Nacion Argentina. The provincial bank grew to be one of the greatest banking institutions on the globe, and would still hold its own had its management in late years been in the hands of men of the old stamp. The Banco Nacion Argentina, although it opens in the midst of a dreary crisis and without a share being subscribed, has yet, when properly considered, the best and greatest of all capitals in the mellowed experience which its president and every member of its board of directors has of the trials, the errors, and the misfortunes of its predecessor and of the glaring scandals which produced its fall. That the new bank will one way or the other help the market admits of no manner of doubt, since even before its doors are officially opened we feel its beneficent effects. In Europe a bank such as the one under consideration would not hold out a month; but here everything is so very different—credit, business, speculation, payments, renewals all so vary from the hard European standard—that, to turn the corner and escape from the crisis, we must embrace the very causes which produced it; we must go back in order to go forward and repeat the very error that five years ago began our ruin. Let those who oppose our thesis measure, if they can, the gigantic chasm which the closing up of the provincial bank, the National Bank, the two mortgage banks, the English Bank of the River Plate, and other smaller banks have caused in this market. To go on as we were going was but to intensify the crisis. The production of the country extending, the purchasing power of the

dollar diminishing, every hour the chasm enlarging; banks loaded up to the eyes with patriotic bonds, treasury bills, municipal bills, and what not; no money to discount and hardly enough to pay depositors. Things were every day getting worse, and so well did they know it in London that what at first was condemned by every London banker as a downright scandal was afterwards pushed into law by Broad street, Moorgate street, and Throgmorton street influences. There is, indeed, so much to be said on this very severe subject that it may be wise to be unwise at the moment. To lift the curtain too high might be a very grave error. If the men at the head of this new bank stand true to themselves and to the market, then all will go well, for the country itself will pull us out of the mire; but if we are to have a repetition of the old National Bank blunders, then better for us all that our friend Mr. Casares should play the part of Quintus Curtius and, hand in hand with his directors, jump into the crisis chasm that is yawning and gaping around.

With all good wishes for the new Bank of the Argentine Nation, yet no one must for a moment suppose that an addition of $50,000,000 of inconvertible notes which it is about to make to the already excessive volume of the currency will have any benign influence upon the crisis. While it may give a spirit to the discount business and thus temporarily assist in reviving trade, its tendency, instead of bringing the country back to a specie basis, will be to still further diminish the gold value of the paper dollar and postpone the day of general liquidation.

RÉSUMÉ OF ARGENTINE LIABILITIES.

And this, without any intentional exaggeration, is the present financial picture of the Argentine Republic. A more deplorable balance sheet of liabilities, considering the limited resources with which to meet them, is scarcely to be found in the history of modern nations. Between funded debts, *cédula* obligations, guarantied bank-note circulation, deferred interest bonds, "patriotic" loans, Government guaranties, and outstanding treasury certificates, the burden laid upon the Argentine Republic would seem to be considerably greater than it can conveniently bear. Added up at their face value, the total liabilities—national, provincial, and municipal—amount to the enormous sum of $1,495,109,141; but, though the greater portion of this indebtedness was contracted at the par of gold, yet, owing to the suspension of specie payments and the present depreciation of the national dollar, this would not be a fair statement of the indebtedness; so, reducing what is in currency to gold at 350 per cent, the figures stand as follows:

Description.	Gold.	Annual charge.
National bonded debt	$449,333,141	$22,500,000
Debts of the provinces	122,962,000	7,377,000
Debts of the municipalities	20,600,000	1,236,000
Floating debts ($71,300,000 paper)	15,700,000	1,250,000
National and provincial cédulas ($524,000,000 paper)	150,000,000	10,500,000
Guarantied bank circulation ($256,914,000 paper)	73,400,000	.....
Circulation of the new Bank of the Nation ($50,000,000)	14,500,000	.....
Railroad guaranties	.....	4,625,000
Total	846,495,141	47,488,000

In the above table the interest or annual charge on each item of indebtedness, of course, is estimated—that of the national bonded debt at an average of 5 per cent, that of the provinces and municipalities at an average of 6 per cent, and that of the *cédula* bonds at an average of 7 per cent. The annual charge for railway guaranties is estimated by the minister of the interior.

THE FINANCIAL OUTLOOK.

What is the prospect that the national and provincial governments will be able to meet these annual interest charges?

The provinces, as we know, have already defaulted in the payment of their interest coupons; and it seems hardly possible that the National Government, with its own burdens weighing it down, will undertake to make any provision for them.

The interest on the national and provincial coupons is also in default, the amounts thus overdue now being paid in scrip, which certificates are unsalable on the market.

The interest on the national bonded debt has been in part provided for for the next three years by the *moritorium* loan; but, after that, what?

The Argentine finance minister is laboring with a zeal which all must admire to arrange the financial affairs of the nation on such a basis that when the three years have expired there will have accumulated a sufficient surplus to resume and continue the service of the interest on the public debt. He estimates that at the end of that period the excess of receipts over expenditures will amount to $24,456,782 in gold. With all the increase which he has effected in tariff rates and the imposition of internal-revenue taxes, will he be able to do this? Owing to the reduction in imports which is now beginning to appear and the reduced consumption consequent upon the hard times which the people are now passing through, I do not think so; but, even if he manages to secure such a surplus, will it save the situation?

THE PRESENT SITUATION.

I can not discover as yet that there has been any improvement in the financial outlook of the country since the close of my last annual report. Indeed, with a closer examination into the fiscal affairs of the nation the apparent hopelessness of the situation has become even more accentuated. Since the resignation of Juarez Celman, about the only thing accomplished by the Government has been to find out more minutely and more clearly the full measure of the financial woes which have fallen to the lot of the Argentine Republic. Those who had brought the nation to this unfortunate condition had in their exodus from office left but few traces of the secret ways and means by which they had made such a wreck of the most prosperous Republic in South America. In the midst of this chaos and uncertainty Dr. V. F. Lopez was called by President Pellegrini to assume the portfolio of the treasury, and he was at once confronted with "confusion worse confounded." There were millions upon millions of debt, upon the arrange-

ment of which hung in suspense the credit, if not the existence, of the Government, and not a dollar left in the treasury of the nation. His report to the late Congress, in some of its paragraphs reviewing the situation, sounds like a wail of despair over the fallen fortunes of the Republic. He says:

When I took charge of the department of finance, the country was under the spell of an extreme political situation; in the midst of a financial crisis more violent and desperate than ever before experienced. The honor of the Republic was in jeopardy. It would be useless to recur to it now, were it not indispensable that an impartial public opinion should judge justly of acts which the exigencies of the moment imposed upon the Government. Our revenues, our resources, had entirely disappeared. We were weighed down with debt and obligations which were maturing at home and abroad. The National Bank was owing the Government $47,791,483 in paper and $12,641,120 in gold, besides $18,500,000 in gold which it owed to foreign creditors and $11,644,000 in gold which it owed to creditors at home, and yet without any available means whatever at its command. Social chaos and financial ruin stared the country in the face. Anarchy and confusion threatened not far off. The new Government had no alternative. In the presence of this enormous ruin and of an impending bankruptcy which would destroy both internal and foreign credit, as the only hope on which to base a financial reorganization a further issue of irredeemable paper was made. The necessity was extreme, and it was an act of supreme duty—none the less bitter and hard, however, because such further inflation of the currency was not in accord with the political principles which have governed me through life. It was made only because we might thereby save the life of the nation. All governments, all nations have had to do so; and there seemed no other way out of our complications.

The minister does not paint the outlook when he came into office any darker than the reality. He was required not only to take action in regard to the interest on the bonded debt and to raise means to meet the immense floating indebtedness held by importunate creditors here in the country, but he had to reorganize the custom-houses and other sources of revenue, in order to make provision for the current money necessary to keep the wheels of government in motion. It was a situation not of his own making or ordering. He was in no way responsible for it, but he had succeeded to it. If, under these circumstances, he has failed thus far in solving the problem of Argentine finances, may it not be because the problem is one which will require many anxious years for its solution? If he has failed thus far to bring light out of the darkness which overwhelms the fiscal affairs of the Argentine Republic, may it not be because it will require time, which is more than human agency, to do so? It is very easy to criticize what has been done; but who, in the desperate straits in which he has been placed, could have done any better? It is not always safe or fair to judge of measures of government from a single standpoint, and there are diseases which must be humored in order to save the patient. During our late war the exigencies of the situation were such that our paper currency had to be increased and increased again and again, long after the suspension of specie payments; and the misfortunes which have overtaken the Argentine Republic may have required a further issue of paper to tide over still greater evils before the heroic treatment could be safely adopted. Whatever Dr. Lopez has done or has foreborne to do has not been from caprice, but he has been

actuated by what he patriotically considered was demanded by the necessities of the case. Evidently he has a more intimate acquaintance with the shoals and quicksands over and through which the Argentine Republic is floundering than those who are merely looking on, and he is entitled to credit accordingly.

COMPOUNDING OR REFUNDING THE DEBT.

The Argentine Republic has an undertaking of tremendous proportions upon its hands, and on the base on which it is now running it is my opinion that it will not succeed in sustaining the credit of the nation. I do not think the Government has, or will have for years to come, the available resources to meet the service of its obligations, with all the economies it may practice and with all the surplus it may be able to accumulate from increased tariff and heavy internal-revenue taxation. I do not believe it will find itself in much better condition at the end of the three years' *moritorium* to resume the payment of the interest on its bonded and *cédula* indebtedness than it is now. The *moritorium*, which seems to have been primarily intended to help the fallen house of Baring Brothers & Co., or rather the creditors of that house, has, so far as the Argentine Republic is concerned, only postponed pay day and ultimate liquidation and quite uselessly increased the bonded debt of the nation. It would have been a public relief for the Government to have defaulted outright and thus to have at once placed itself in a position to receive overtures from its creditors, leaving the house of Baring Brothers & Co. to have gone into bankruptcy in the usual way. For, in my opinion, the only hope of the Argentine Republic is in a scaling of the amount of its indebtedness or a refunding of it at a lower rate of interest. By one or the other of these expedients the nation may be able to "pull through," but not otherwise. Compounding the debt on some such scale as $100 for $500 or refunding the whole at a very low rate of interest might bring the annual service within the possibilities of the country; but, unless some such compromise as this is arranged, I do not see what present prospect there is either for the Government or for the creditors.

George W. Drabble, esq., president of the board of directors of the London and River Plate Bank, a representative man, who is thoroughly acquainted, from a lifelong experience, with Argentine financial affairs, in a recent published interview says:

> I am not so sure that it would not have been better—for the Argentine Republic, at least—if the crash had been permitted to take its course. It would have been bad for London, but out of it would have come stability for the Argentine Republic. * * * I do not think the country will be ready to begin to pay the interest on its debt three years hence except by the issue of further indebtedness, and this will simply increase the premium on gold. * * * There is an element that may pull the country out of its difficulties, but it is keeping in the background now. It is there, however, and I have hopes of it. However, I do not believe the debt as it stands will be paid in full.

In the present depressed condition of trade, and handicapped by a circulating medium which is not only greatly depreciated, but very fluctuating

in value, the Argentine Republic seems to have no other way out of its difficulties for a generation to come, even with a succession of good harvests and a resumption of the tide of foreign immigration. And this is the view which is taken of the Argentine situation by many able financiers, both here and in Europe.

THE FUTURE HAS ITS PROMISES.

It does not follow, however, that meanwhile the country is to remain in "the slough of despond." The misfortunes of the Government are one thing and the misfortunes of the people are another. Though very closely connected, the latter in many respects depending upon the other, yet they are not the same. While the Government may for years be compelled to labor through a condition of semibankruptcy ere it once more recovers its financial standing, yet the country itself may very much sooner be able to rally from its depression and in a manner, at least, resume its former prosperity. The people are in possession of elements of recovery in which the Government is lacking, and they can not be repressed by depreciated currency or default in the service of the national debt. The wealth of the country before the crisis consisted of its millions of leagues of succulent grasses, of the immense flocks and herds which grazed upon them, of other wide expanses all through the interior, of splendid farming lands which each year show greater breadths and richer harvests, of inexhaustible forests of choicest cabinet woods, and mineral resources of undeveloped possibilities. These are still here, and, whatever may be the failures of the Government, these will not fail. Whatever may be the temporary depression in trade or commerce or industrial pursuits, and however great may be the personal losses as the liquidation progresses, yet production in all the different departments of human labor will go on, enhancing and stimulating the general wealth of the country. Personal and commercial credit may be of a slower growth, but these also will ultimately find a safe foothold on which to stand and build. Altogether the situation, although most unsatisfactory, is not without its promises for the future; and those who despair of the country because of the misfortunes which have befallen it are making a sad mistake. However complete may now appear the crash, the structure of Argentine progress and Argentine prosperity will ultimately be reëstablished on a more satisfactory and a more permanent basis.

E. L. BAKER,
Consul.

UNITED STATES CONSULATE,
Buenos Ayres, December 16, 1891.

BEET SUGAR IN HESSE.

REPORT BY COMMERCIAL AGENT SMITH, OF MAYENCE.

In the grand duchy of Hesse, in which this consular district is situated, there are but three sugar factories all told, which produced 7,354 tons of sugar (2,200 pounds to the ton) during the working year 1888–'89.

The sugar taxes are paid to the Government at Berlin, where the drawbacks on sugar exported are also paid. The sugar law being a national one, the whole matter is regulated by the Reichstag.

The consul-general at Berlin, to whom all information is accessible, will, without doubt, in his report state the question for the whole Empire.

JAMES H. SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, November 9, 1891.

THE BANANA FOOD COMPANY.

REPORT BY VICE-CONSUL ROBINSON, OF COLON.

A company has been formed in New York, with a capital of $75,000, under the name of the Banana Food Company, for the purpose of drying and otherwise preparing bananas and plantains for food. A charter or certificate of incorporation has been obtained from the State of West Virginia, and as soon as the necessary preliminaries can be arranged it is proposed to begin operations at this place.

Experiments have already been made going to show that the fruit can be successfully evaporated and prepared for market either as dried fruit, as flour or meal, or canned in pulp. In one and all of these forms the claim is made that the product can be put up so cheaply and in such attractive shapes as a food supply that it will be certain to come into immediate and general use in the United States and Europe.

The following comparative analysis has been made by Prof. Wynter Blythe, practical analyst, etc., London, England:

Constituents.	Banana.	Sago.	Corn meal.	Wheat flour.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Water	8.05	13	11.09	15.08
Soluble albumen dextrine	4.45			
Starch	82.57	78.06	85.3	81.6
Albumenoids	2.28	2.57	2.37	2.11
Fat	0.77			
Ash	1.88	0.53	0.43	0.35

Careful observations have also been made as to the comparative loss of weight by evaporation, and it has been found that, while apples yield only 12 per cent, bananas with the skins removed will give within a small fraction of 25 per cent of thoroughly desiccated fruit.

The supply of plantains and bananas in the region accessible to this port by land and sea is very large already and might be made practically unlimited. The fruit grows to maturity all the year round and may be obtained every day throughout the year, so that the manufacture of food therefrom can be continuous, in which there is an advantage over the prepared fruits.

of the temperate zones. It is therefore believed that, as the banana, so nutritious and wholesome, has come to be extensively used and highly valued in its raw or fresh state, there will certainly soon be a demand for the same in its prepared forms, and that banana food will become an important element in the future nourishment of the world's millions.

In the collapsed industrial condition of the isthmus, due to the failure of the Panama Canal Company, the organization of the local enterprise under consideration is regarded with hopeful interest. Some even go so far as to predict that it may prove to be the beginning of great things.

TRACY ROBINSON,
Vice-Consul.

UNITED STATES CONSULATE,
Colon, December 31, 1891.

BEET SUGAR IN THE DRESDEN DISTRICT.

REPORT BY CONSUL PALMER.

There was but one beet-sugar factory located and in operation in this consular district during the fiscal year ended June 30, 1891, viz, the Oberlansitzer Zuckerfabrik Actiengesellschaft, at Löbau, which factory has been in operation from September 26, 1890, to February 22, 1891, and produced 35,675 kilograms of sugar. There were no imports of foreign sugar into the district.

The amount received from internal tax was 597,923.60 marks, comprising tax on the material (beets) at the rate of 80 pfennigs per 100 kilograms and tax on the sugar at the rate of 12 marks per 100 kilograms. From August 1, 1892, the tax on beets will be abolished, and the rate on sugar will be increased to 18 marks per 100 kilograms. The tax on the sugar itself is levied when it leaves the factory and is destined for consumption within Germany. Until then it is kept under official supervision in storerooms. In sugar destined for exportation no tax is levied, and the tax charged on the beets is refunded.

There were no exports of sugar, and consequently no bounty paid on such.

Two officers were stationed in the factory all the year for control over the tax on the sugar, and three more officers were employed there during the period of working the beets. The beets are weighed under the supervision of the tax officers, and the results of such weighing entered on the registers by the officers, who also keep these books. The entries are submitted monthly to the tax agency at Löbau, where the figures are controlled and the tax levied.

The factory produces only for inland consumption.

AULICK PALMER,
Consul.

UNITED STATES CONSULATE,
Dresden, December 19, 1891.

FISHING INDUSTRY OF THE UNITED KINGDOM.

REPORT BY CONSUL DANIELS, OF HULL.

TRAWL-FISHING.

To arrive at a comprehensive estimate of the rise and progress of the trawl-fishing industry in England, it is necessary to extend the retrospect fifty years. With the exception of the introduction of steam vessels, which effected a mighty revolution in the trade, and which is dealt with further on, for twenty-five or thirty years there have only been small changes, and those of little importance, although sufficiently distinct to be reckoned as onward steps in the movement. The only change of note during the last quarter of a century has been the introduction of steam power to lighten manual labor and to facilitate the getting on board of the trawl gear. The radical change in the trawl fishery—the emergence from primitive fashions to the present more effective style—requires a survey of not less than half a century.

Taking the year 1840 as the starting point, the primitive method of trawl-fishing presented itself in all its simplicity. The trawlnet was in shape substantially the same as at the present time, but the boats were small, the fishermen poor, and their mode of fishing timorous. The plan was to push off a short distance from the shore and ply their calling during a few daylight hours. Having fished as long as it was prudent to do so, they returned before nightfall, if they had not previously been driven in by presages of bad weather. This form of trawl-fishing is practiced at the present day at different points on the English coast, where it originated.

The knowledge as to the antiquity of the trawlnet and the prosecution of the trawl-fishing industry is very limited; there are no written records of its history. At remote periods the trawlnet was known under different names, but in all its forms it was looked upon as a very destructive apparatus in the capture of fish. So destructive was it considered to be in the narrow waters where it was used that people became alarmed lest it should exhaust the supply of fish. This idea seemed invariably to follow the use of the trawlnet, and it was only natural when, in these little bays and inlets in which it was diligently used, there came a time of marked diminution in the catches of fish that people should complain of the destructive machine and interfere with its further use for a set period of time. This antagonistic popular feeling led to enactments being passed limiting the operations of the trawl and confining the mesh to a certain size, in order that the small and immature fish should be able to escape. These restrictions continued to a modern period, say the year 1860 or thereabouts, but since then no restrictions have been set as to the size of the meshes of the net.

The early operations of trawl-fishing may be located in the western part of England, in Torbay and the vicinity of Plymouth; probably also in other parts adjacent. It was known to exist likewise at the mouth of the Thames,

where the waters of the estuary yielded at certain times of the year small fish in abundance, and a convenient market was found in the metropolis. Before the great fishing grounds of the North Sea were explored the fish used to make into these bays and inlets for feeding and spawning.

The coast of Holland offered great facilities for trawl-fishing and the Zuyder Zee proved a fruitful fishing ground. Here trawling as a valuable method of fish-catching appears to have been in use from a remote period. English fishermen of the present day speak of immense catches of ground fish, from which it appears that the fishermen pursued a lucrative trade at a comparatively short distance from the coast.

Thus matters stood when the Grimsby fishermen came to the front and took those steps which in due course completely revolutionized the fishing trade. About the year 1845 the art of fishing began to emerge from the primitive state, and men began to venture into the North Sea for the fishing grounds of the Dogger-Bank. These men found the Dutchmen already on the spot engaged in fishing in vessels called "bombs" and "snibs." Since then the trade has gone on increasing, until now it is no mere figure of speech to say that the North Sea is covered with fishing vessels.

Forty years ago the trade had so outgrown its original condition as to furnish vessels of about 30 tons, classed as "fishing smacks." Some of the vessels were under that tonnage. With the increase of size had also come an improvement in method and machinery. The fishermen abandoned the narrow waters and committed themselves to the broad seas. These men, visiting the coast of Holland, opened up a profitable trade, and by and by established their vessels in "fleets." The necessity of these combinations soon manifested itself. Having to fish at a much greater distance from the London market, it was essential to associate themselves together for the purpose of sending fish to market by each other while it remained fresh. The plan of operations also suggested the adaptation of the "well" vessels, already in existence, for the purpose of keeping the fish alive in transit. This was indispensable in the case of certain kinds of fish caught by the trawl, such as plaice and turbots, and also cod taken with hook and line. Cod line-fishing is of greater antiquity and reached an advanced stage much sooner than trawl-fishing, and vessels of an elaborate type and large in size have generally been more common in the cod trade than in the trawl-fishing industry. The Dutch fishermen held these turbots and soles as of insignificant worth and discarded them as being unprofitable. They readily sold them to English fishermen for a trifle, or exchanged them for other sorts in greater demand in the markets of Holland.

In connection with the London fish trade, the metropolis has always been advanced both in opinion and action on the question of fish supply. Ice was introduced for the preservation of the fish, and this arrangement enabled the Thames fishermen to prosecute their quest in the North Sea with more boldness and to remain longer at sea. With ice on board to preserve the fish, they were enabled to prosecute their trade in a vigorous manner, and,

having formed themselves into companies, associations, or fleets, with regular lines of cutters or carriers, they were in a position to keep the metropolis regularly supplied with fish. This is the period whence the great progress of the trawl-fishing trade dates. Systematized in this way, the growth of the deep-sea fishing industry was of a remarkable character, and a greater step in advance was made then than at any time previously in the trade. When the trade was in its primitive state, the men ventured only a short distance to sea and at the first sign of stormy weather made for the harbor, as is the practice now where crude methods prevail. When deep-sea fishing became established, the vessels continued at sea in spite of the weather, in order to keep up the necessary supply of fish from the fleets. This practice of the Thames fishermen gradually extended itself to the other sections of the trade who had followed their example and their tracks in the deep-sea fishing enterprise. These men began to get a larger class of vessels to enable them to visit more distant grounds, where they had to encounter heavier weather and rougher seas.

The commercial importance of the trawl-fishing trade began to manifest itself prominently about forty years ago. At that period the various fishing ports along the coasts, which had been in the habit of fishing with drift nets at seasonable periods of the year, began to turn their attention to trawl-fishing. Yarmouth and Lowestoft, fishing emporiums for herring and mackerel, began to take action. Yarmouth, which had then only half a dozen fishing smacks, began to adopt a larger type of vessel and to realize the importance of the trade. That part of the British coast proved itself to be much better suited to the trade than others, by reason of better railway transit to the markets. But the supremacy of Yarmouth only continued for a short time; almost immediately came a new departure—the introduction of steam vessels for collecting the fish at sea and carrying them direct to London.

Side by side with this improvement in the collection and carriage of fish there grew up another important branch of the trawling trade. This was what is known as "single boating," and it was in the early period of this new growth that Hull and Grimsby came into notice and by and by into prominence.

Formerly the west country fishermen migrated during certain seasons of the year, first to Ramsgate, then to Lowestoft and Yarmouth, where they came in contact with the Barking fishermen. A few of the more enterprising fishermen prosecuted their calling further north, and Hull, Grimsby, and Scarborough became interested in the fisheries. The western fishermen would be blown out of their track in gales of wind and incidentally came on much larger catches of fish than they had hitherto ever dreamed of. Having to make for the nearest port to find a market, they naturally came into the Humber, where they were able to dispose readily of their fish. Some of the fishermen appear to have prosecuted their researches as far north as Scarborough, where, at that time, no such thing as a trawlnet existed. These people discovered off Scarborough bountiful fish supplies close inshore. As

Scarborough is visited largely in the summer season by the aristocracy and the wealthy classes, a profitable business was done in fish. But this was not a permanent trade, and both in the matter of supply and demand there was a periodical disturbance. These fishing grounds are not far distant from the shore, and only small quantities of salable fish remain the whole of the year. The habit of the fishermen was to visit those seaside resorts where fish were found in adjacent grounds, and in this way they pursued a profitable occupation. In consequence of not having ice wherewith to preserve the fish, these men were unable to go out on the more distant grounds during the summer months.

This inshore mode of fishing was prosecuted further and further north, until the fishermen found themselves off the coasts of Durham and Northumberland, where was discovered a very plentiful and profitable fishing ground.

About 1857 Hull had become an important fishing port. With the introduction of ice Grimsby took up this plan of fish preservation, and at this time began to rise in the scale of fishing ports. The situation of Grimsby at the mouth of the Humber gave it additional importance, being nearer to the sea by some 20 miles than Hull.

With the increased activity in the trade of trawl-fishing, and after the appearance in the North Sea of the large modern vessels, replete with the best appliances for catching fish, a certain diminution of the fish has been discovered on the southern banks. Where the fish formerly abounded, on the eastern side of the North Sea and along the Dutch shores, the grounds became depleted and remain so at this day. While the profitable fish formerly frequenting those parts are not caught in any great quantities, its enhanced value—something like 400 or 500 per cent—attracts a class of vessels of the modern type. These vessels continue to fish upon grounds which have been abandoned by the larger vessels as no longer yielding a sufficient income to maintain the more expensive kind of fishing vessels; but the profits are enough to furnish a livelihood to owners of smaller vessels. In many parts of the North Sea where the London and Yarmouth work goes on the vessels do not catch fish in great abundance, yet the yield is sufficient to maintain that branch of the trade. Fleets from London and Grimbsy are now engaged fishing in the despised waters, which the steam trawlers would not dream of going over. These vessels pick up fish constantly in sufficient quantity to maintain their vessels and crews in a very comfortable position. While the catches in these particular places are moderate, yet, by reason of the enhanced value of the fish, the work is remunerative. Notwithstanding this result, the vessels known as "single boaters," as distinct from "fleeters," which term comprises steamers and the larger class of smacks, are not contented to work in these circumscribed places, but range over more distant and wider parts of the North Sea, in order that they may obtain such larger catches of fish as will pay the vessel to carry their own cargoes to market, instead of grouping themselves in fleets or sending their fish ashore by carriers.

During later periods the trawl smacks, which had proceeded along the coast inshore principally, became familiar with the merchants residing in Durham and Northumberland, and also attracted the curiosity and attention of the Scotch people, who did not, however, enter into the smack trade to any great extent. Their part in the history of the fishing trade belongs to a later period and to another branch of development consequent on the introduction of steam trawling.

The most notable features of the trade at this juncture were the vast distances traversed in search of fruitful fishing grounds. Otherwise, the style of the net, except so far as it had been enlarged to keep pace with the increased size of the vessel and made more effective and destructive in the capture of fish, remained much the same, as virtually did all the machinery. The increased weight of the trawl gear, which grew in size with the growth of the vessel, rendered it necessary to alter entirely the whole method of the working appliances. At the commencement of the period of review the trawling vessels were not more than 30 tons register, and some of them considerably under; now the vessels performing the corresponding kind of work are of 90 tons, so that it has been found necessary in the course of development which the trade has undergone to treble the size of the vessel in order to provide for the necessities of this enormously expanded enterprise.

Not only has it been found necessary to build vessels three times the size of those formerly in use, but it has been found equally essential to alter the rig of the vessel and to furnish it with steam appliances for the purposes of superseding manual labor, which had become totally inadequate to the task of performing the work of getting in the trawlnet.

An effort has now been made to trace the progress of trawl-fishing from the period of its most primitive methods, half a century ago, to the present time, when it may be regarded as in its most advanced condition. Originally trawl-fishing was simply the case of men going out in their small boats for a few hours in daylight. Gradually the trade assumed the form of a commercial venture, and, as the profits grew, men were tempted to prosecute their enterprise further from home. When fish was found to be an article of ready sale, not only to the dwellers on the coast, but in greater measure and with more profit to the wealthy visitors to the noted watering places, the hope of gain stimulated the men to still further exertions. From these comparatively small beginnings the fish soon became a valuable commodity to be landed, not in bulk as formerly, but packed in baskets and boxes ready to be sent all over the country. This was either done in the humbler stages of the trade by the catchers themselves or, under more perfect organization, by the associations already referred to, which placed the fish on board carriers.

Hence has come the development of a vast commercial industry, which, starting with probably a few hundred persons, now affords constant and lucrative employment to hundreds of thousands. In like progression the capital invested in this great industry has grown from hundreds of pounds sterling to millions sterling.

This brief outline of the rise and progress of the English trawl-fishing trade in its industrial, commercial, and financial aspects shows, if only in an imperfect way, the immense changes which the past fifty years have wrought in the English trawl fishery.

FISHING SMACKS, CREWS, ETC.

The modern smack, although the outcome of the little vessels referred to in the preceding paragraphs, is a very different vessel from its prototype as a fish-catching machine. The term "fishing smack" may be taken as a general term and may embrace strictly within its meaning all that the English fishermen understand a fishing vessel to be, but there are some marked features in reference to smacks which may be described.

In the early part of the period which has been covered the fishing smack (so known) was a very primitive style of vessel. It was not very good in shape and in size was small. Specimens of this craft still exist, not as objects of curiosity in museums of nautical history, but in actual working existence at places where fishing is still carried on after the longshore system. That system implies that the vessels were engaged in narrow waters and at a short distance from the beach. The most primitive sample of fishing vessel is to be found at this time fishing at Brighton, the famed watering place on the English Channel. It is what is termed a "hog boat," and bears about the same relationship to the highly finished and splendidly equipped modern fishing vessel as its namesake does to a high-mettled race horse. Starting from that style of vessel, there came in the course of a few years a more symmetrical kind of boat generally, the pioneers of the type of what may be considered as deep-sea vessels, and which, as previously stated, ranged from 20 tons as a minimum size to 30 tons as a maximum. Coast fishing was always prosecuted by smaller craft than those which went to greater distances at sea. There was always a distinct difference observable, too, between the fishing vessels which belonged to the Thames, as one of the principal fishing depots, and those emanating from Brixham, on the southwest coast of England, which were known as the Torbay vessels. Generally speaking, the latter were what are styled "dry-bottom" vessels, as distinguished from the "well" vessels sailing from the estuary of the Thames. The Torbay vessels were almost exclusively "dry-bottom" vessels, with a little loose stone ballast thrown into the hold on which to lay the fish when caught. Their mode of preserving the fish until they could be brought to the market was either by laying them down on the loose stone ballast already spoken of immediately after being caught or by packing them in baskets on deck. Either of these methods sufficed to keep the fish fresh and marketable, because the time they were under such "preservation" was only short, the markets being comparatively near. That plan seemed to answer very well formerly, and, in fact, is followed at the present time with regard to the "hog boats," and also holds good as to others of the earlier types of vessels on the coasts. These vessels only remain short periods at sea, and consequently that method of taking care of the fish answers fairly well.

As trade increased with the Torbay section of trawl fishermen, it soon became necessary to have larger vessels, which were fitted up more commodiously for the purpose of giving better accommodation to the crews and better means of stowing the larger quantities of fish caught; but for a considerable period the old method of having loose ballast in the hold on which to lay the fish was adhered to. Except that the hold was larger, the whole pattern of the arrangements for the stowage of the fish was very much the same as before.

Later on it was discovered, after the fishermen had carried their enterprise into the North Sea, that this loose ballast system was an extremely dangerous way of trimming vessels, and the fishing-vessel insurance companies demanded that the vessels should be fitted up in a safer and more complete manner. These insurance companies insisted that a strong wooden platform should be laid on top of the stone ballast, in order to prevent its shifting when the vessel was struck by heavy seas in gales of wind. This plan was found serviceable in its turn, but it was soon followed by the superior method of dividing the vessels' holds into rooms on top of the platform. These rooms or divisions were found useful for the purpose of separating the different classes of fish. That method of stowage remained, generally speaking, in vogue until the introduction of ice for the preservation of fish for more extended periods.

The fleets of vessels emanating from the Thames mainly and that part of the English coast were generally "well" vessels so constructed. They had been in the habit of prosecuting for a considerable period a different kind of fishing, such as catching whiting, haddocks, and codfish with line and hook. The usual practice was to work one period of the year in line-fishing and another period in trawl-fishing, in which latter operations they had been in the habit of keeping certain kinds of fish alive. These vessels were from the first, so far as known, larger than the Torbay vessels. Later on, when the vessels were aggregated into fleets, the pattern of vessels with wells was abandoned, and all those that were used for trawling purposes and are now used may be generally described as "dry-bottom" vessels. There is no necessity for the wells in the case of vessels engaged in fleet operations. Comparing the size of the two classes of vessels engaged in the trawl fisheries, that is, the Torbay section and the Thames section, it will give a sufficiently comprehensive idea to say that, while the Torbay vessels were from 20 to 30 tons register, the Thames vessels of the corresponding period were from 30 to 40 tons. The time arrived when the class of smaller vessels became considerably the largest, and it is essential to say how that reversion in comparative size came about.

The section of vessels which did not confine themselves to fleet operations, namely, such as the Hull and Grimsby vessels, required considerable space for the purpose of constructing ice rooms and a more complete pattern of fish rooms, in order to provide for the proper stowage and preservation of fish dealt with in this way. One of the purposes of these improved arrange-

ments, over and above that of stowing and preserving the vessels' individual catches, was to enable them occasionally and at certain periods to receive fish from other vessels under a system during the summer months known as "bulk fleeting," or, in other words, a pure partnership transaction between several vessels as distinguished from "fleeting" generally. In the latter case work is conducted on the principle of freight charges by the vessel which carries the fish. "Bulk fleeting" was ordinarily carried on by a number of men combining for mutual assistance and under the authority and management of their owners and agreeing to work in company during the summer months or part of the summer months, when the fish are not sufficiently plentiful for them to catch independent cargoes in quick time by separate operations. A further reason for this combination was that during the summer months there is greater difficulty in preserving fish in salable condition, although stowed in ice. It was therefore found to be more to the mutual advantage of these fishermen to combine together on a simple partnership principle, and they contributed their fish daily to certain of the vessels of their own kind. These vessels received the fish, threw them loosely in bulk with ice, and properly arranged forms in the rooms already referred to. The fish thus gathered were sold on the arrival of the carrying vessel at port and the proceeds equally divided, regardless of the contribution of any particular vessel. In "general fleeting" the different catches of fish are separately consigned to the vessel acting as carrier, and the consignor receives what his own fish bring in market, less, of course, the charge of carriage. In the other case, under the pure partnership system, a member of the combination receives his equal proportion of proceeds without regard at all to the quantity of fish he may have contributed.

This system has been in vogue for many years, and still continues. It is a system which has its particular advantages and disadvantages, which any commercial man will readily discover. In the one case he pays the freightage of such fish as he may catch and receives the proceeds, whether it be more or less. In the other he is subject to the failures of his fellows; but at the same time the system is found to be a most effective way of preserving fish if kept for any lengthened periods, and, if anything, is more economical than is the other plan.

Of course, there are several great objections to the "bulking" system. The prominent ones are that the best men—the men who excel in fishing and money-earning capacity—are very much handicapped when mixed up with men who seldom make good earnings. Very undesirable results occasionally arise, and great complaint is frequent.

Coming now to the build and rig of the vessels, it may be laid down that from a very early period, so far as anything is known about the trade in remote times, the "smack," or sloop, rig was generally the method adopted in fitting out fishing vessels, this rig being found most convenient in maneuvering the vessel and pursuing the work of trawl-fishing. Vessels of the earlier period were usually well sparred and well supplied with canvas, with

the view of attaining the greatest amount of speed. Later on the vessels were so much enlarged and the length of the spars and spread of canvas were so great that it was found impossible to work with the smack rig without very serious disadvantages. Then the vessels were changed from smack rig to "ketch" rig, thereby dividing the canvas into more pieces, and at the same time the spars were lightened and shortened. This alteration was found to be absolutely necessary in most of the vessels, which had become so much larger than formerly, owing to the fact that the crew—the ancient number of the crew being, generally speaking, five—had not increased with the increased size of the vessel. This fact was due more especially to a difficulty that was anticipated by the owners—that of interference with the existing mode of remuneration of the crews. The method of payment appears to have continued the same throughout the process of development from smaller to larger vessels. It may seem very anomalous, yet it is nevertheless a fact that vessels which have increased until they are three times their former size are worked by the same number of hands as in bygone times.

Those who have made a study of the question are very much dissatisfied with this part of the business, but have always abstained from interfering with the system, for the reason that it would involve some dispute between the owners of the vessels and the fishermen who manned them.

Taking the fishing vessels altogether, they are no doubt a very fast-sailing class of craft and one possessed of very superior seagoing qualities. They are unquestionably capable of battling with the most disagreeable circumstances of heavy seas and strong gales, which are prevalent in the North Sea during the winter season. They are very snug and strongly rigged and equipped, the construction of the hull being, as a rule, in excess of all requirements of the highest class of vessels known in the mercantile marine of Great Britain and Ireland. This observation holds good especially with regard to construction, and the living accommodation is of a very superior character compared with former conditions. The introduction of steam power, which became necessary for the purpose of overcoming the heavy strain of the fishing gear with which the small number of hands in the vessel was quite incapable of dealing, has been the means of reducing the amount of physical or manual labor to the lowest possible point in all that relates to pulling and hauling.

But the difficulty arising from the comparatively small number of the crew is found to be chiefly in manipulation when the larger quantities of fish are being caught by reason of the increased size and capability of the fishing gear, as well as the general management and performance of seamanship duties. These remarks are generally, although not exclusively, applicable to what is known as the Torbay style of fishing; but in this relation it is necessary to say a word or two about the other, or Thames, system.

It must be noted that the vessels which developed under the Thames, or, as it would be more popularly accurate to say, the Barking, system were formerly manned with very numerous crews as compared with those sailing

under the Torbay system. For instance, instead of having five hands, as in the other cases, they invariably carried eight or nine, sometimes as many as ten, people—double the number of the other class of vessel, that is, the Torbay type. And while the crews of the latter class of vessels were paid mainly by share, that is, remunerated according to results, the Barking crews were paid almost exclusively in wages, with the exception of the captain, or skipper, who was also remunerated by a percentage on the value of the takings of fish; but later on, as the vessels amalgamated, came into closer contact with each other, and were more mixed up together, so to speak, the Yarmouth men became assimilated to those at Hull and Grimsby and adopted the share system, but in a modified form. They lessened the number of hands to six or seven, which is the number in the modern vessel, and payment is made on a mixed system of fixed wages and percentages on earnings. These two systems of remuneration are generally in force at the present day.

In the "codmen" vessels, engaged in catching codfish, owing to the nature of the work, it is necessary there should be more hands than can be put up with on board the trawling vessels. The crews of such "lining" vessels, that is, those whose duty it is to use codding lines, vary in number from eight to twelve in vessels of similar tonnage to the trawlers carrying only five hands; but the codmen working on the share system carry about eight hands. These vessels, working on the mixed system of wages and percentages, are commonly of a larger type and customarily carry about twelve hands, four of whom, in many cases, are apprentices.

Formerly in the Torbay system the custom was to have two men and three boys per vessel, the latter being in most cases apprentices; but subsequently, when the vessels became so much larger, there was a change to three men and two apprentices. In the Barking system a much larger number of hands predominated, the crew of each individual vessel being augmented by four or five apprentices.

It is, however, necessary to state that at the present time and right through the fishing trade the apprenticeship system does not obtain so generally as in former years. This antagonistic feeling to the practice of binding lads under indenture for a term of years is owing chiefly to the fact that the laws which relate to the government of apprentices have interfered largely with the control so essential to proper discipline, and also in consequence of the additional fact that practical men, who were formerly the majority of the smack-owning class, have been replaced by persons who do not understand so well the management of these matters. The apprenticeship system has consequently lapsed to a very large extent, although some effort is being made to resuscitate it in Grimsby and elsewhere.

The diet in English fishing vessels is of the most ample, almost luxurious, description. The disciplinary arrangements are fairly good, taken as a whole. The masters, captains, or skippers—the term is convertible—of the fishing vessels are mostly possessed of, or qualified to receive, a special certificate which the board of trade, as a department of the British Government, has

prescribed and provided. Besides this statutory provision, and, as a matter of fact, before it came into operation, a kind of disciplinary certificate was issued by the insurance societies, which have supervision over the vessels they respectively insure. The mate, or, as he is generally styled, the second hand, is also subject to a certificate granted by the board of trade.

Under these arrangements any infraction of duty or any occurrence of disaster which may take place comes under the notice of the insurance companies, is duly and fully inquired into, and judgment is meted out to the master according to the practical knowledge and opinion of the persons sitting as a jury on the case. In addition to the foregoing investigation, the board of trade takes cognizance of every case of loss of life at sea, and in some cases this board also inquires into strandings and casualties from other causes.

The crews of English fishing vessels, taken as a whole, and having regard to the fact that theirs is a peculiar style and mode of living and occupation, may be considered as a very respectable portion of the population. It is only right that this should be stated. Owners have considerable trouble in governing the craft, owing to the want of the necessary supervisory conditions in the case of the subordinate members of the crews and the dying out of the apprenticeship system, which latter circumstance has tended very largely to the breaking down of the almost perfect disciplinary organization formerly so intimately associated with the fishing trade. These considerations have been found of such serious import that great efforts have been made of late to remedy the evils resulting from the decline of the apprenticeship system, and it may be said that at the present time the outlook has been considerably improved.

With reference to the cost of the fishing vessels, it will be well within the mark to say that from an expenditure of $2,500 the outlay has risen to $5,000 and even to $10,000 on the prime cost of the single smack. This statement will suffice to show the great developments, each attended with a corresponding increase of cost, which have been introduced on the part of the owners in relation to these trawling smacks. A striking comparison may here be instituted. At the early period to which reference has been made a vessel which could well be classed under the title of an efficient trawl-fishing smack could be built, fully equipped, and sent to sea in the most complete condition then known for $2,500; during the modern period the cost has increased to as much as $10,000, several of the vessels of the last-named kind reaching to over 90 tons register. The increased earnings of the vessels are not at all commensurate with the excessive outlay which has been devoted to this purpose. Further, while the first cost of the plant has been increased so much as described, there has been a corresponding increase in the working expenses.

A question may arise here as to why the owners should have been so foolish as to embark on so vastly increased and unprofitable an outlay under a system which already yielded splendid results. Why have they taken such

gigantic strides without the promise of adequate advantage to themselves? The answer is that they have been impelled to this course by a variety of almost irresistible circumstances; but they have arrived at a point where they have at last really discovered the folly of the proceedings, inasmuch as during the last two or three years the trawl-fishing trade especially, and the fishing trade generally, in sailing vessels and those embracing the lining trade have found themselves to be in a deplorable condition financially, and a very large number of bankruptcies have occurred. It would seem to be a case of the "survival of the fittest," and that a sort of climacteric period in the history of the fishing trade has been reached.

It has been fully realized that the changes in the direction just referred to, namely, enormous outlay and increased size of vessels, have been in excess of the requirements, and a reaction is taking place in favor of what may be considered a medium type of vessel somewhere between the extremes mentioned. There is a general consensus of opinion among the most practical men in the trade that this medium-sized vessel is the most profitable in pursuing the occupation of trawl-fishing.

FROM SAIL TO STEAM.

The first association of steam with trawl-fishing was carrying the fish from the fleets to the markets. Those steam vessels have been previously mentioned as "cutters" or "carriers." At a considerably later period steam was introduced on board the smacks to replace manual labor in getting in the fishing gear, but for many years there was not the slightest idea entertained, even by the most sanguine and enterprising owner or man, of steam being used in trawling vessels for catching fish; in fact, there existed an old-fashioned prejudice against the use of steam for the performance of such work. The opinion was held that it was impossible for a steam vessel to catch fish by dragging a trawlnet. The prevalent notion among fishermen was that the sound of the paddle wheels or of the screw propeller, as the case might be, together with the commotion created generally by vessels of this character, was quite sufficient to scare away all fish that might possibly be found between the vessels' keels and the ground over which the nets had to pass when catching fish by trawling operations. These ideas subsequent events proved unfounded.

The use of steam for trawling purposes came about gradually and almost accidentally. It is necessary to say that at the outset there were strong financial reasons against such an innovation, even if it were ever seriously entertained.

The companies or associations in the fishing trade were affrighted at the least suggestion of employing steam for fish-catching, believing that the income derived from the trawlnet would never be sufficient to maintain such an expensive machine. This view was to some extent justified by the fact that the fish taken in the greatest abundance were of the commoner kind, which for a very long period during the progress of this trade had made little

money in the markets; hence the income, although a profitable one, having regard to the comparatively small cost of the vessel, was not of such a character as to bear any very great strain.

The fishing vessels belonging to the Torbay class, which had pursued their trawl-fishing operations along the coasts of Yorkshire, Durham, and Northumberland, came into contact largely with the more favorable conditions in which sea-borne traffic was carried out under steam.

The trawling vessels were prosecuting their labors within the immediate vicinity of the great coal ports of Middlesborough, Hartlepool, Seaham, Sunderland, and the Tyne, and, while so engaged in this neighborhood, naturally became associated with the steam vessels which are constantly found lying, in suitable weather, off the coasts for the purpose of towing ships. Those vessels were tugboats, the duties of which are to render towage services to vessels requiring such assistance. During periods of calm weather, when a trawling smack had completed its catch and the master desired to get his fish fresh to market, but could not do so for want of wind, these tugboats were frequently engaged to tow the trawlers into the bays and harbors where it was desired to land the fish. These circumstances happening frequently during the period of the year when the trawlers were engaged on these coasts, namely, the summer months, numbers of the fishermen became more or less intimate with the masters and crews of the steam vessels. This intimacy resulted almost naturally in one or two of the fishermen, more advanced and enterprising in their views than their fellows, making suggestions which, as results proved, were profitable to both parties. When the smacks desired to trawl and were unable to do so for lack of wind, what more natural than a proposition from the fishermen, who wished to be moving, that the steam tug should take the trawl vessel in tow and drag her along over a prescribed course, both vessels sharing, of course, in the proceeds which might be obtained from the operations?

This temporary partnership being found not only practicable, but profitable, resulting, in fact, in almost complete success, it is easy to see that the plan would become generally adopted in course of time. From a few isolated cases this method of fishing in spite of wind or weather gradually extended itself. From the experience gained by the people on board the tugboats, and a keen observation on their part of the amount of money to be realized by dragging trawlnets, although the tugs' crews were unacquainted with the practical working of the fishing trade, they began to consider whether it would not serve their purpose, as a method of filling up idle time, to supplement their earnings from what may be called their legitimate resources by engaging in the operation of trawl-fishing on their own account.

The origin of this system may be dated from about the year 1860, at which period steam power for any service whatever in connection with the fishing trade, except in connection with the fish-carriers, was altogether unknown. Ten years later several tugboats were to be found in the localities named actually engaged on their own account in trawling. These vessels

were the pioneers of the splendid steam-trawling fleets which now work the North Sea. It will be seen that the matter had only a small beginning, and the trawling operations described were confined within a very limited area. But finding that it was possible to earn a considerable amount of money, some of the proprietors of the steamboats made it their special study to obtain practical fishermen to assist them in carrying out their projects at a period of the year when the smacks were not found in the locality. These enterprising men went further and adventurously launched out to greater distances with their steam vessels, to the places where fish were known to abound in large quantities. The result of this movement was of such a character in the all-important matter of earnings that between 1870 and 1880 it became the general occupation in which the people on board the paddle steam tugs were engaged; and towing operations, originally the chief and indeed only pursuit for which the boats were specially designed, became in a measure only of secondary consideration. To such an extent were these fishing operations carried on that vessels constructed and adapted for towing were converted to the work of trawling regardless of their former occupation.

The use of steam may be said to have revolutionized the operation of trawl-fishing. In the early periods fishermen had a positive dread of steam as applicable to any portion of their avocation, although even at this time steam power had been attempted for the purpose of overcoming the strain on the gear. A few solitary instances are recorded of steam engines having been introduced many years ago on board one or two of the vessels engaged in trawl-fishing. They were worked for some time, but so little were those services appreciated that the engines were condemned and cast aside as not being equal to the task or were of such faulty construction as to be useless. Whatever was the reason for discarding these earliest examples of steam appliances in a trawler, there can be no doubt that at the outset steam, as an assistant in the trade, was discredited and the first samples of engines thrown aside. Now steam power is looked upon as an imperative necessity, and it is only stating a simple fact to say that throughout the vast number of fishing vessels belonging to the port of Grimsby only one or two instances exist at the present time of trawlers without steam engines on board. From this period the so-called "paddle tugs" pursued the trawling with fair success and profit, and a great rage took possession of people respecting the business. With a view of further development, the idea possessed the minds of speculators to pursue operations by steam as a deep-sea venture, as distinguished from the longshore work, in which the tugs had hitherto been engaged. The distinction between the two kinds of fishing operations was soon seen and appreciated, and great anxiety was felt to realize the advantage of the more extended operations. This occurred between 1870 and 1880, but for a considerable time doubt and hesitation were manifested as to whether the mode of trawling by means of paddle boats for deep-sea work was the best. As soon as the subject came under the reflection of practical men—men of great experience on all matters relating to fishing operations—it was de-

termined to construct vessels of the screw-propeller type, especially designed and adapted to deep-sea work; but, owing to the strong prejudices and want of comprehensive knowledge on the part of fishermen, it was found necessary to make this class of vessels somewhat like the larger type of smacks which were so familiar to them. In the matter of shape and rig, and with regard to the appliances for trawling, these new vessels were, as nearly as possible, like the smacks. For instance, to allay the prejudices which still existed against steam power being the best or indeed a useful and profitable method of catching fish by trawling, the earlier steam vessels for deep-sea work were rigged with a considerable amount of canvas, to enable the vessels to avail themselves of the wind when practicable.

By this process of proceeding, by gradual stages a point has been reached at the present time when the steam fishing vessel comes by comparison near in character to the merchant steamship, inasmuch as the canvas power has been reduced to the minimum necessary to assist in steadying the vessel and to enable certain parts of the work to be conducted when it is essential that the propeller should be stopped. In this manner the stage has been reached when this type of vessel is considered to be the most perfect machine ever designed to obtain the maximum amount of fish that can be caught by trawl-fishing vessels.

As to the commercial aspect of the question, it must be admitted that a very large amount of money has been earned by steam trawling, and it is believed by competent authorities that steam fishing must of necessity supersede to a considerable extent—as has already taken place in the mercantile marine—the sailing vessels. It is quite true that during the progress of the matters referred to a number of persons who have engaged in steam trawling have already come to grief—in plain words, have made signal failure, more especially in the paddle type of vessels; but this has been due largely to causes which are avoidable in the hands of practical people. In all commercial ventures which give indications of large returns a great deal of unwise speculation is indulged in, and under such conditions as these it is to be feared that very dire results will ensue, which may be detrimental to the whole project as a fishing scheme, if not absolutely disastrous. Although large sums of money have doubtless been earned in the tugboat fishing, still, on account of the rash way in which persons rushed into speculation—not only in the system of inshore fishing, but later on in the deep-sea ventures—and the extravagant projects to which they have committed themselves in the extended efforts to supersede sailing vessels, the ultimate results are sufficient to cause grave apprehension. Those who have worked on economical lines may be able to survive the great outlay involved in the maintainance of the system, but there would appear to be little hope for those who have recklessly committed themselves to extravagant outlay, from which it seems impossible to hope for an adequate return. By reason of the same causes, while smack-owners have been advancing to a larger class of vessels, they have precipitated themselves into greater extravagance in the

cost than was absolutely necessary for the safe and profitable working of the trade.

The persons who engaged in steam deep-sea ventures at first thought to combine with their fishing the occupation of carrying fish for the sailing vessels on freight, principally during one period of the year, as had been done by the carriers. This practice was, however, speedily abandoned. It was not until a few of the more adventurous people had been working for four or five years that the rest of the fishing community fully realized the advantages of steam trawlers, and since that time the increase of this class of vessel has been almost phenomenal.

At the ports of Grimsby and Hull the steam trawler is to be found in its most advanced type and in the greatest numbers. The particular reason for their introduction at these ports may be ascribed to several causes. Grimsby and Hull have been two great centers for the reception of fish from their numerous fleets of vessels and their distribution throughout the United Kingdom. It was not until after the introduction of steam fishing vessels of the early type, namely, the paddle tugboats, on the north coasts that Grimsby and Hull became aware that a severe competition against the two ports was involved in the project. It was soon discovered that the efficiency of these vessels in catching fish and their ready power of transferring them to the markets were the means of furnishing the customers with fish in a much fresher condition than that in which they could be obtained at either Grimsby or Hull under the ordinary methods of communication. The consequence of this serious state of things—a crisis in itself which threatened the commercial prosperity of the two ports—was that the influential fish merchants took the matter into consideration. They succeeded in getting together a sufficient amount of capital among themselves and from interested friends, which enabled them to induce a few substantial companies to prosecute the steam deep-sea fishing with the greatest possible enterprise and at the same time with the greatest possible prospects of success.

At this time Scotland, the inhabitants of which are large fish consumers, was a great customer of the ports of Hull and Grimsby. But, owing to the introduction of steam trawling, together with the fact that the Scotch coasts abound with fish in greater measure than any other known locality, the Scotch merchants at some of the fishing ports of their coasts—notably Aberdeen—were induced to enter upon this venture, with the result that Aberdeen possesses at the present time a very considerable fleet of steam trawlers, which are pursuing both the longshore and deep-sea fishing operations with a fair measure of success. The port of Aberdeen, in fact, has now become as noted and as famous a fishing station for Scotland and for Great Britain generally as were formerly Grimsby, Hull, and Yarmouth, which, up to that time, had been regarded as exclusively the great fishing emporiums of the entire Kingdom.

Under these conditions of the trawl-fishing trade, it will have been gathered that, whereas in a previous era the markets were dependent for their

supply of fish on the state of the wind and the weather, or were largely and seriously affected by them, they were now placed in a position superior to such adverse elements. Formerly there were frequent and long periods in which the catch of fish was often reduced to a minimum, if not absolutely wanting, owing either to prevailing calms or contrary winds, during which it was impossible to obtain supplies of trawl fish. Under the application, however, of steam to the fishing industry an unfailing system of complete and regular supply was established, and consumers can count on almost uninterrupted consignments to the active markets. This condition of things affords a striking illustration of the vast difference between the old and new systems, between catching fish by means of sailing vessels and the same process under the power of steam. The consequence, as may be expected, has been the addition of a stability to the whole undertaking of trawl-fishing which, from the nature of things, it was impossible to impart thereto in former years, and has given to the business all the characteristics of a sound and reliable commercial enterprise.

The fact must not be ignored that, with all these increasing operations going on in the comparatively limited waters of the North Sea, in which nearly the whole of the labors of trawl-fishing are carried on, a great danger looms ahead, unless some regard be paid to those parts which are well known as the nurseries of young fish, and upon which these myriad vessels pursue their devastating career during periods when the grounds are swarming with immature fish scarcely fitted for the market. It becomes questionable, indeed, whether certain kinds of fish, which are very valuable commercially speaking, will maintain a sufficient equilibrium in point of numbers as to admit of this destructive process being continued without very serious, if not disastrous, results to the whole business of trawl-fishing. It has not yet been proved to what extent the expense of visiting still more distant grounds can be upheld by the income derivable from trawl-fishing. These are matters for future experiments, and the problem is not yet solved. The subject ought not to be dismissed without saying further that so serious are these considerations in the estimation of the most practical and experienced persons—men who have made the matter their anxious study—that strenuous efforts are being put forth to prevent, as the phrase goes, the "killing of the goose that lays the golden eggs." These efforts take the form of suggesting, and, in short, imperatively demanding, legislative interference against the capture and sale of immature fish. One point, and that an important one, in regard to steam trawling operations has been abundantly proved after careful experiments. Unless the yield of fish is comparatively plentiful, the catching of fish by steam power can not be remuneratively continued out of the revenue realized.

Another important feature is associated with the introduction of steam in the fishing trade. For five or six years past the steam vessel has been used for prosecuting line-fishing. Specially designed steam well vessels of large capacity for the stowage and preservation of fish alive, as well as of consid-

erable speed, have been devoted to the purpose of visiting more distant fishing grounds, hitherto beyond the scope of operations as carried on by sailing vessels. Most notable in this connection are the line-fishing operations around the coasts of Iceland. This island, lying at a considerable distance out in the North Atlantic, was well known to fishermen in the hook-and-line trade generally as a place of summer resort, where cargoes of codfish were caught, salted down in bulk, and bought up by Scotch merchants chiefly and dried for the purpose of export to the continental markets.

These vessels, on the return journey, usually brought a small number of line fish, by the sale of which they were able to supplement the salt-fish cargo. But, generally speaking, the distance to Iceland is too great to be visited by these vessels in the ordinary enterprise of cod-fishing to supply the markets with fish in a fresh condition. Lately, a constant trade has been kept up during six or eight months of the year by steam lining vessels, which have brought from the coasts referred to large cargoes of halibut more especially, and this has added very greatly to the money-earning power of this class of vessel. It has been found that the yield of fish in the North Sea is not sufficient in value to maintain these vessels at line-fishing, but, owing to the greater quantity of fish in Icelandic waters, the results have been completely satisfactory. The vessels engaged in this trade terminate their operations as soon as the autumn season brings short days and severe weather, under which conditions it is impossible to pursue this particular trade.

Trawl-fishing can only be carried on by very strong dragging power or towing power on the part of the vessel engaged in it, but some of the line-fishing operations can be conducted when the vessel is comparatively stationary. At most the vessel only needs to move at a moderate speed to enable her to put out and take in her lines. Of course, this is more efficiently done under any circumstances by a steamer than by a sailing vessel, but yet not to such an extent as to warrant outlay for line work in general. This can only be prosecuted profitably when there are long distances to be traversed under adverse circumstances and the certainty of plentiful fishing when the vessel reaches the grounds. The advantages on the side of steam arise from the fact that such vessels can insure a comparatively short passage, and are thus able to deliver their fish in good condition. On the other hand, sailing vessels, if they have to cover more than a reasonable distance, often arrive at port with their cargoes spoiled. The limiting conditions must be a given quantity of fish and a given distance to travel to insure profitable results in trawling. The Lowestoft and Ramsgate steam trawlers have been given up, owing to short distances and small quantities of fish. During the winter these Iceland vessels are usually put into the trawling business in the North Sea.

TRAWLING.

Trawling implies the dragging of a net along the bottom of the sea to catch fish. The process is peculiar to itself, and is distinguished in many

respects from the usual methods of catching fish by nets. The general mode of net-fishing is to have the nets suspended in the water in the style of what are called drift nets, or nets which may be fixed to stakes on the seashore or which may be lowered to the bottom of the sea or to other convenient depths and moored in a manner whereby fish progressing one way or another may swim into them. The stow or sprat net is of the same character—a net moored to a vessel. But the trawlnet is distinct from these, and in operation differs from all other modes of catching fish. To some little extent its process comes near to that of shore seine-fishing. In the latter case means are employed by the operator to surround, or partially surround, shoals of fish visible to the eye or known to be in certain localities. The seine is shot round the shoal in semicircular fashion and its contents dragged ashore. To that extent seine-fishing resembles trawl-fishing, but here the resemblance ceases.

Trawling relies essentially for its capture of fish upon chasing, overtaking, or intercepting them by dragging along in a forcible manner at the bottom of the sea a net to capture fish which are not engaged in the usual way in which fish are supposed to be engaged, that is, swimming about, but which are lying on the ground in a dormant or comparatively dormant state for the purpose of feeding, resting, spawning, or other physical or natural purposes. Under sailing conditions the trawling vessel is only limited in her operations by the direction and force of the wind, but generally in every case where possible regard has to be had to the tide, inasmuch as trawling has to be conducted principally with the tide or drifting with the tide. For certain practical reasons it is difficult to fish with the trawlnet against the tide, where it runs with any considerable force. With the tide the progress over the ground is accelerated, and a greater area is covered, which is a great factor in the efficacy of the operation. Naturally a vessel fishing with the tide can cover a greater space than one fishing against it, and thus increases her chances of fish. Another element which enters into consideration, according to the opinion of most fishermen, is that fish when comparatively stationary hold themselves against the tide; and, owing to this apparently well-established propensity and other causes, it is considered to be the proper thing for the most successful working to drag the net with the tide. The principal feature of trawling is that the net must be dragged along. To put the net down and allow it to remain stationary would not be trawling; the net in that case would simply become an anchor. There must be a propelling power either of wind or steam.

In the single-boat operations or longshore trawling, wherein each vessel is engaged on its own account, the master of each vessel uses his own judgment as to the direction in which he will trawl. His decision is governed by his own knowledge of the conditions of the ground, the direction in which the tide is running, the depth of water, and the likelihood of fish being found. In deep-sea fishing, where there is an extensive tract of ground to cover, he adopts the method of putting his vessel on a tack closehauled and drags

the net along on each tack alternately, in order to hold on to the ground with the least possible leeway. This plan simply corresponds with the nautical maneuver of a ship beating to windward, and is the general method in deep-sea trawl-fishing. If, after pursuing the work in this way for some time, the vessel, owing to the wind prevailing in a given direction, is found to have got off the particular ground it is desirable to keep her on, the leeway has to be made up by beating to windward to regain a suitable position.

The usual mode in these operations is to make the best of the dark hours of the night or of such periods when daylight is not supposed to penetrate to the bottom of the sea, this being the most profitable time for taking fish. During the daylight the trawl is kept up, the vessel taken to windward of her fishing ground to be ready for further operations when night falls, and the crew are engaged in clearing away and stowing the fish.

In fleet operations the whole of the vessels constituting the fleet are under the direction of a commodore or admiral, who has authority placed in his hands by the owners to work the vessels in such positions as may be decided upon and in the best possible locations for the convenience of the carriers which attend on the fleet. He has also to superintend the work of transporting the fish from the trawling smacks to the carriers, with a view of seeing the work carried out in a safe, methodical, and expeditious way. Fishing is pursued diligently during the night, and the process of getting the fish ready to be placed on board the carriers commences early in the morning. All this work—the shooting or dropping overboard of the trawls, the taking up of them, and preparing the fish for boarding the carriers—is carried out by given signals from the admiral's vessel. When moderate catches of fish have been taken and the weather is favorable, these operations are conducted in a very systematic way, with comparative safety and so expeditiously that the carrier completes the lading and leaves the fishing ground at fairly regular periods, according to the distance from the port or market of the fleet. When the operations are being conducted in rough weather, they are attended with considerable risk. The danger exists of collisions between the vessels congregated near together and performing various maneuvers round the carrier and in the possibility of the swamping or capsizing of the boats engaged in the work. These contingencies have occupied much attention of late, and the greatest precautions have been introduced in the method of conducting these critical operations.

Trawling is carried on, therefore, by means of a net, known as a trawl, lowered from the vessel in a suitable manner and attached thereto by a sufficient length of rope to enable the trawl to be dragged upon the ground according to the knowledge and judgment necessary to enable it to do its work effectively.

The trawlnet is considered to be a very peculiar machine. It consists of the following parts: First, the net itself; second, the beam; third, the ground rope (so called); fourth, the trawl heads. These parts, with a few other auxiliaries and attachments which do not call for special mention, constitute

the machine known as the beam trawlnet. The dimensions of the modern trawl, taken from the beam to what is called the cod end, are: Length, about 100 feet; width, about 50 feet. The net is made up in several parts, the meshes of which vary in size from 3 to 6 inches in length. The shape of the net is such as to form a large, open mouth, the upper part of which—the top jaw, as it may be termed—is elevated about 4 feet from the ground. The bottom part, which drags on the ground, is of semicircular shape, and attached to it is a large, roughly constructed rope called the ground rope, which may be compared to a plowshare in its relation to trawling operations, as it goes slightly under the surface of the ground, or, if not, presses closely upon it, so that the fish which are hovering close to the ground or even burrowing into it are turned out by the rope. The trawl beam, which keeps the mouth of the net open, is elevated from the ground the necessary distance by an iron appliance at each end known as the trawl heads, into the top part of which the trawl beam is mortised. The lower part of the head, to which the ends of the ground rope are attached, is known as the sole, which has a surface of about 5 inches in width, and drags along the ground. These trawl heads, when used on anything like hard ground, rapidly wear out. They are constructed generally of iron, with steel soles for the purpose of resisting the friction, and have a weight varying from 300 to 400 pounds. The trawl beam is made up, as a rule, of two or more pieces of wood strongly scarfed together, the wood employed usually being oak, but ash and elm are used for this purpose. The beam contains about 35 cubic feet of wood and may be taken altogether to weigh some three-fourths of a ton; the ground rope will weigh 3 cwts., and the net itself about 2½ cwts.

The net is constructed in four pieces, namely, back, baitings, belly, and wings. The back is usually a square piece, but by means of gatherings and increasings a shape is given to the net which corresponds to a large tapering bag. There are many peculiarities in the design and construction of the net in order to give it a suitable shape. The lower, or tail-end, portion, technically known as the cod end, is where the smaller mesh is found, the upper portion having a large mesh simply to guide the fish down to the lower portion, where they are entrapped or inclosed. In the part near to the cod end there are certain intricacies in the net, some known as pockets and others as flappers or valves, so that when the fish are taken, instead of being able to pass out of the net in returning upwards, they are prevented from doing so by means of these intricacies. A great deal of ingenuity has been exercised at divers times with the view of designing a net which shall enable the immature and worthless fish to escape and retain the larger and more marketable kinds; but in all such attempts it has been found that the greater consideration of taking fish would have to be sacrificed to the lesser one of discrimination, and therefore the trawlnet as at present constructed must be accepted as a machine which takes everything and refuses nothing which happens to be in its way. It is the most complete and destructive fish net

in its design that it is possible for ingenuity to devise, and no doubt does do a considerable amount of injury to the spawn of those kinds of fish which are attached or deposited on the ground, as well as destroys a great quantity of immature fish. With reference to the spawning of fish on the ground, opinions differ, and the subject will be further referred to in dealing with varieties of fish.

There are several types of trawl-beam nets, but the main features of each are similar. They vary in size and shape, according to the ideas of different classes of fishermen and according to the well-established necessities which attach to the varying conditions under which trawl-fishing operations are carried out, as, for instance, a trawlnet specially designed for sole-catching on the particular grounds where this valuable fish is found. There are trawl-nets also specially constructed for fishing where tides exist, but these are not the best kinds of trawls for use where there is little or no tide. The great point is to get the most suitable net for general fish-catching, and that is the machine which has been described in detail. All the rest are modifications of a secondary character—enlargements here and contractions there, as greater or lesser length or distention in various parts may be thought desirable, or the trawl heads are constructed of a different pattern.

The Dutch and some other fishermen have a type of trawl head which, when the net ceases to be dragged from the lack of wind or other cause, automatically closes the mouth of the net completely by the beam dropping to the ground and thereby preventing the escape of fish which may be in the upper part. The English fishermen attach only minor importance to such a process. The part of the net which drags on the ground and where the débris accumulates, the part called the cod end, is protected underneath by such substances as old net or other chafing gear being attached thereto for the purpose of preventing injury while being dragged along the ground with considerable weight in the net.

The extreme cod end is closed by means of a small rope reeved through the end meshes and tied by a slipknot. When that part of the net is brought to the vessel's side and is found to contain any quantity of fish, the bag thus formed by distention is hoisted on board by tackle from the masthead and by means of guys is kept suspended over the vessel's deck until the slipknot is liberated. The fish thus fall on the vessel's deck, and are then prepared by the crew for market.

It has not been an unusual thing for 5 tons of fish to be captured by the trawlnet in one haul; but in most of such cases, where there is any danger of the net bursting before being hoisted in, the usual plan to prevent so costly an accident is to cut a hole in the upper part of the net, take out the fish, and thus relieve the pressure.

The trawlnet is dragged along behind the vessel by means of certain rope attachments known as bridles, one of which is fastened to each end of the trawl beam, or rather to the trawl head into which the beam is socketed. In some vessels there is a third bridle, called a "dandy," the use of which

is to facilitate the placing by the side of the vessel or getting on board the beam when it reaches the surface of the water under the steam power applied for thus getting in the gear. These bridles are usually of a length equal to two and a half times the length of the trawl beam, in order that the plant may work sufficiently easy in the strain of the pull and to prevent the collapse or breaking of the beam, a casualty which commonly happens if the trawlnet gets foul of any obstruction on the ground, or by the heavy tension exerted by the vessel in bad weather, or by the sea striking her, or in the operation of heaving in the gear.

At the angle formed by the junction of the bridles there is attached, by a powerful iron shackle, a very strong rope or warp, which is secured on board the vessel. The length of warp required for prosecuting fishing operations in a suitable manner is generally considered by competent fishermen to be not less than three times the depth of water under the vessel's bottom. The length of warp required for North Sea trawl-fishing is most commonly 150 fathoms, and never exceeds 200 fathoms. In a large-sized trawling smack, to which these dimensions apply, the warp varies from 7 to 8 inches in diameter, the bridles and dandy attached to the beam being about 6 inches. The warp and bridles together weigh about a ton.

Taken altogether, a set of trawl gear may be considered a very cumbrous machine and difficult to handle, and the working of it may be taken as a very disagreeable operation when compared with the working of other fishing nets in general. Nevertheless, there are not wanting persons ready to engage in the occupation, as the remuneration for the labor performed is very liberal.

The wear and tear of this gear is very great from the nature of the work. The gear is extremely liable to injury and destruction from coming in contact with foreign substances, such as wrecks and rocks, as it is impossible to know accurately the nature of the ground. This want of knowledge adds to the probabilities of danger to the trawl, either by immediate catastrophe and entire loss or by the speedy wearing out of the net. Each trawl vessel is reckoned, under the conditions of ordinary work; to require a complete set of warps and bridles once a year and from two to three trawlnets and ground ropes. In favorable working the trawl beam may remain on the vessel's side over twelve months; but, on the other hand, instances have been known where a vessel has broken ten or twelve beams during the year. The duration of a pair of trawl heads working on soft ground may be taken as twelve months without repairs; but, if they are working on hard ground, the expense of restoration in consequence of strain and breakage may be considered as equal to two pairs per year in ordinary working.

The rope used by sailing trawl vessels and all the associations with the trawlnet is mainly of the fiber known as manilla hemp, which is put through a preserving process in the case of the rope with Stockholm tar and in the case of the net with coal tar, which is found to be the best agent for counteracting the destructive action of the slime and filth inseparable from its working.

The cost of a complete set of trawl gear as described ranges from $350 to $400, according to the state of the market, more especially in reference to the rope, the price of which fluctuates very considerably.

The depths of water in which trawling is prosecuted in the North Sea varies very greatly. This is a matter which will be more clearly explained in the section dealing with the fishing banks or grounds, and it will be sufficient to say here that the variation is actually from 3 to 60 fathoms.

THE STEAM TRAWLER.

The steam trawlers are vessels varying considerably in size, outline, and general arrangements, some of them being, as previously described, paddle boats of the usual towing-boat style, engaged in inshore fishing and having but little accommodation for the stowage of fish. These vessels vary from 25 to 50 nominal horse power, and generally were not originally designed for fishing operations at all, but have been adapted thereto by the owners in the best possible way. Such vessels as these are usually manned by about seven hands, three of whom are connected with the machinery department, but assist in the fishing operations, the other four being specially devoted to that duty. On the approach of bad weather these vessels usually lie in harbor, only proceeding to sea when favorable circumstances prevail.

The deep-sea steam trawling vessels, so far as the design of the hull is concerned, may be likened to the modern fishing smack. The greatest care is bestowed on their mechanical arrangements, with the object of getting the greatest qualities of speed at the least expenditure of fuel, etc. With this object the vessels are very largely supplied with triple compound engines and with boilers constructed to sustain a pressure of from 150 to 160 pounds to the square inch. They are looked upon as 10-knot vessels, but generally accomplish about 9 knots, that being the rate of progress through the water found most economical. The vessels vary from 100 to 200 tons gross, but a considerable number are somewhat in excess of this capacity. Their nominal engine power is usually taken as from 30 to 40 horse power, giving an indicated force of from 200 to 300 horse power. The crews mostly consist of from eight to ten hands. In the larger-sized vessels there are three hands devoted to engine-room work, one of whom is a trimmer or stoker, and the other two acting as first and second engineer, respectively. Commonly, however, the engine room is managed by two engineers and the trimming of the coal is performed by members of the crew, who also take part in fishing work.

The vessels are furnished with excellent living accommodations for the crew, one portion occupying the after part and the other the fore part, each in very comfortable quarters. The steam trawlers are almost exclusively built of iron and the sailing trawlers of wood. The bunker capacity of the steam trawler is usually equal to the storage of fourteen days' supply of coal, the consumption of which varies from 2½ to 4 tons per day per vessel. The arrangements for the stowage of fish are also most ample, the space availa-

ble for this purpose being large compared with that in the sailing vessels, notwithstanding the great space required for the machinery and coal. The general outlines and dimensions are as follows: Length, from 95 to 105 feet; depth of hold, from 10 to 11 feet; breadth of beam, from 19 to 21 feet. There is generally a small raised deck forward and a quarter-deck aft, under which the cabin is constructed, and in some cases this quarter-deck is carried forward to near midships. The draft of water when the vessel is fully equipped for sea may be taken at from 12 to 13 feet aft and from 7 to 8 feet forward. The vessels are built to the requirements of the highest class—in some respects considerably in excess of the requirements—of the merchant service, as the wear and tear on all parts of the vessel during working operations is very considerable.

The cost of these vessels ranges between $20,000 and $30,000. Those that are adapted to the purposes of both trawl-fishing and line-fishing are of the larger and more expensive type. The difference between a "well" vessel and a "dry-bottom" vessel in every case, whether for sails or steam, wooden or iron, generally runs to about $2,500 excess in the case of the "well" vessel. The well consists of a large tank intricately constructed in the vessel, and the water in it communicates with the outside water by means of holes in the bottom and sides. The sides of the tank have to resist the same strain as the substantial parts of the vessel's hull as regards her buoyancy and flotation strain. The whole appliance occupies a considerable portion of the middle part of the vessel, and this necessitates a corresponding enlargement of the other parts of the vessel to afford the necessary accommodation, and therefore these vessels range to 250 tons gross capacity.

The crews of these vessels are paid partly by fixed wages and partly by results. There are so many modifications in this system that it would be almost impossible to describe them clearly; but, generally speaking, the master and mate of a steam trawler are paid by results alone, the rest of the crew receiving fixed wages, supplemented by certain perquisites. The engineers are paid fixed wages. In the lining vessels the master is paid by results alone, the engineers by fixed wages, and the rest of the crew, with the exception of the steward, receive a fixed remuneration and a percentage on the proceeds of the fish caught. Those members of the crew paid by results alone contribute their portion of the working expenses, and, as they relate to consumable stores—coal and ice charges, etc.—they are deducted from the earnings before the persons receiving shares or percentages are paid, which is only done out of the net money.

The trawl gear upon these vessels is almost the same in pattern and design as that already described, except that it exceeds the sailing vessels' gear considerably in size and weight and, of course, cost. The principal feature is that steel wire takes the place of manilla hemp in the construction of the warps and bridles. Instead of the warp being coiled in the usual method with fiber rope, it is wound on a drum or roller connected with the winch by which the gear is hove inboard. Owing to the smaller circum-

ference of the steel warp, it does not exceed in actual weight the fiber rope used in the sailing smacks, although, of course, it does so in specific gravity; but all other parts of the tackle on the steam trawler exceed considerably that on the sailing vessel.

The cost of the steam trawling gear, owing to the greater wear and tear, is very heavy; but the amount of work which the vessels are capable of performing in trawling operations may be taken as equal to at least three sailing vessels of the most modern and approved type and size.

Fishing operations are conducted in these steam trawlers according to the individual judgment of the master of each vessel. The catch of fish varies considerably in character and quantity; and no certainty exists that any particular kind of fish will be caught with any degree of regularity or in any quantity, except that different grounds yield different kinds of fish. It often happens that, owing to want of judgment or to accident to the gear, a net will burst in getting it out and $200 or $300 worth of fish be lost at a time. The conditions which attach to the working of steam trawlers, as regards the qualifications of the members of the crew and the disciplinary arrangements, are the same as those which govern the sailing vessels.

INSHORE AND DEEP-SEA FISHING.

The term "bank fishing," in relation to operations in the North Sea and elsewhere by trawling vessels, whether sailing or steam, is not used by fishermen as descriptive of any portion or any locality of their work. The terms in general use are, as applied frequently in the course of this report, "inshore fishing" and "deep-sea fishing." The first-mentioned term applies to all those primitive operations in trawl-fishing already described in detail in the first section of this report. It is a pursuit carefully conducted, so as to procure profitable results, and the methods, the gear, and the subsidiary appliances generally are identical in form with those used in deep-sea fishing.

This plan was the only kind of trawl-fishing known in the early history of the trade, from the fact that the knowledge of the fishermen did not enable them to prosecute the undertaking in the wider sense, nor were their vessels or gear fitted in size and strength for such purpose.

The deep-sea fishing operations are very extensive in character, and the distances traversed are enormously great when compared with the earlier efforts, and with the introduction of steam the operations have reached a state of comparative perfection. The term "deep-sea fishing" includes the process of fishing on banks, as also does "inshore fishing," inasmuch as banks are found largely on inshore grounds, more so in number, but not in extent, than in deep-sea operations. No inshore banks are found to correspond in size, however they may do so in character and formation, with the banks which constitute the larger fishing grounds of the North Sea. There, for instance, are the Great Dogger-Bank and the Great Fisher Bank, both celebrated for codfish as well as for trawl fish. The methods adopted in fishing on these banks are identical in every respect with those relating to inshore fishing.

It is a noticeable feature in this bank fishing that the fish are found to abound in certain parts of the bank, sometimes along its edges, whereas other parts of the same bank are found to be entirely barren. This circumstance is due, according to the opinion of fishermen, to the fact that fish prefer certain sheltered places to which they resort for the purpose of spawning, and it is supposed, also, that the food which they seek is found more particularly and in greater abuudance in such spots.

During the experience of the older members of the fishing trade several very remarkable facts have been noticed in connection with this bank fishing. When first visited some parts yielded only small quantities of fish, and those of a very common kind, but after the trawlnet had been dragged about the spot for some time the fishing improved both in quantity and quality. So soon as the plentifulness manifested itself, the attraction of the locality induced more extensive operations at these particular places, with the result that in very many instances they have been entirely denuded of fish. Not only so, but the kind of fish usually not taken by the trawlnet—such as cod and ling, which abounded on these banks previous to trawl-fishing being prosecuted there—are now found by the line fishermen to be very scarce. This scarcity is held by the most thoughtful fishermen to be the result of disturbance to the security for spawning, and hence from natural instincts the fish have abandoned such grounds for more distant places.

Certain kinds of flat fish, such as plaice, turbots, and bulls, are usually taken, or mostly taken, where there is a rising ground on the bottom of the sea. That rising ground is known as a "bank." Other kinds of flat fish, such as soles, are, however, only caught where there is a uniform depth, seldom being caught on rising ground and appearing to prefer deeper waters near to the banks, where they abound in the largest quantities.

Several extraordinary instances of this peculiarity have been met with by the fishermen in the North Sea. A spot of comparatively deep water, well known to fishermen as the Great Silver Pits, where there is an oozy bottom some 10 or 12 miles in length by about 4 in width and bordered by banks on each side, formerly yielded immense quantities of haddocks on the sides, while soles in almost equal catches were found in the deep water between. The catches of soles here have greatly fallen off. The great abundance of fish in this instance may have been due to the sheltered position of the ground.

The vessels employed in catching cod and other kinds of fish, such as ling, mostly taken by hook and line almost invariably prosecute their work on or in close proximity to the banks. The Great Fisher Bank and the Dogger-Bank, the banks off the Färöe Islands, and the shoal waters around Iceland are celebrated for their cod fisheries.

THE NORTH SEA TRAWL FISH.

In giving a description of the trawl fish of the North Sea it will be necessary to limit the observation to a few only of the principal kinds, as it would be impossible, within reasonable bounds, to deal with the numerous varieties trawled up.

The cod is not generally reckoned a trawl fish, although it is brought up in the net in considerable quantities. The fish is usually caught with hook and line by the vessels specially constructed for that branch of the fishing trade. It is a fish distributed so generally about the seas as to make it difficult to define its habits. Large shoals of cod follow the herrings during July, August, and September, but they are not to be found in the same place periodically. At this time so erratic are their movements that the fishermen may suddenly fall in with a shoal of fish, catch a great many, and then as suddenly lose trace of them. These are what are commonly termed shoally fish, and are very fat and large, but they seldom live long after they are caught. During the autumn and winter codfish are to be found in moderate quantities in Clay Deep, along the north side of the Dogger-Bank, the Deep Water, and the Fisher Bank, but not in large migrating shoals. These fish are strong, well fed, and, as the season advances, full of roe. With favorable weather they live a long while. There are various other places where cod are found thinly distributed all the year. In regard to spawning, the cod prefers deep water—30 to 45 fathoms, the grounds just mentioned affording these depths. But it does not appear that the quality of the bottom has anything to do with this preference, as clay, fine sand, black mud, ground covered with weeds, and stony ground are all to be found in these different parts of the sea. The male fish are found in the largest numbers first, but as the time of spawning draws near the female fish outnumber the males. After they have spawned, the greater number migrate. From the time the eggs leave the parent fish till they are matured and the fish have grown to the size of from 12 to 18 inches almost nothing is known of them by fishermen.

The ling is a valuable fish, and considerable numbers are caught in the northern parts of the North Sea. But little is known of its habits.

The hake are but very thinly distributed in the North Sea. Some years since large quantities were to be found off the Jutland coast in the summer, but for some reason they have deserted those grounds at present.

The haddock is the most plentiful of all the bottom fish in the North Sea, and is found periodically in immense shoals in the various parts. In April a large quantity of haddock are found on the northern edge of the western shoal and in the swashway between the western and eastern shoals of the Dogger-Bank. After a few weeks they get scattered about. In May shoals of haddock will sometimes visit the shoal water of the Sylt. These fish all run large, are well fed, and have their stomachs crammed with the small sand eel or sand launce. They seldom stay on these grounds a month. During June, July, and August they do not appear to form shoals in any particular place or ground, being scattered indiscriminately about the sea. Towards the latter end of August large quantities of haddock congregate on the northwest and southwest spits of the Dogger-Bank and in the swashway to the south of the east end of the Great Silver Pits. These fish are in search of herring spawn, of which they are immoderately fond, eating it till their stomachs are distended almost to bursting. They stay on these grounds till

the latter part of October. About the middle of January the haddock begin to congregate along the northernmost side of the Great Fisher Bank, in the deep water to the west and southwest of the Great Fisher Bank, and around the tail end or eastern point of the Dogger-Bank. These are their proper spawning grounds. As usual with all sea fish, nothing is known of the early days of the haddock, the smallest size at which it has ever been seen being about 4 or 5 inches, sometimes on the eastern shoal of the Dogger-Bank, on the outer part of the Well; but the greatest quantity are to be found in the large expanse of the deep water to the northward of the Dogger-Bank. I believe the haddock produces eggs in its fourth or fifth year.

The whiting is not very plentiful out in the open sea; in fact, it rather appears to have become scarcer than formerly. Whitings are found in the winter in the Great Silver Pits, around the westernmost edge of the Dogger-Bank off grounds, and the flat of the Well. In the spring they migrate towards the shore, perhaps to spawn, but more probably in search of food in the shape of young fish, shrimps, etc., which are more plentiful in the bays and round the headlands.

The cat, or wolf, fish is in every way suitable for food, but its ungainly and repulsive appearance militates against its introduction. It chiefly inhabits the northern side of the Dogger-Bank in depths of 17 to 45 fathoms. This fish does not appear to roam about.

The turbot is but thinly distributed about the North Sea. Its chief resorts are about the banks off Flamborough Head, the lower part of the Dogger-Bank, and the rising ground on the German coast. A few are also found on the Great Fisher Bank, tail end of the Dogger-Bank, and the Well. The turbot appears to migrate towards the German coast about March, and formerly considerable numbers were caught on these grounds. The larger part of them were very small, averaging from 1 to 4 pounds in weight. Notwithstanding the enormous quantity of eggs produced by this fish, it is gradually but surely getting scarcer.

The brill is not a migratory fish. It is chiefly found in the Westernmost Rough and about the Dowsing Sand, and is also thinly distributed about the sea, more especially on stony ground. I believe this fish's spawn sinks, or has some provision of nature whereby it may be fixed to stones, weeds, etc.

The sole is very erratic in its migrations. Sometimes it is found in shallow water in very cold weather, and at other times, when the weather is warm, it will be in deep water, and *vice versa*. A few years ago larger quantities of sole annually migrated to the Dutch and German coasts in the months of April, May, and June, probably in order to spawn. This migration has greatly fallen off since the winter of 1878–'79, when an enormous quantity were caught in the Great Silver Pits. As already said, one-year-old soles are from 2 to 4 inches in length; at two years, from 5 to 9 inches; at four years some contain spawn, and at five years they are large soles. They still grow slowly a few more years.

The lemon sole somewhat resembles the brill in its habits, not appearing to migrate. It lives on stony or coarse ground. The large and small fish are found together; therefore it is thought that the eggs adhere to the ground.

The plaice are a fish that are very regular in their migrations. In March they are found on the rising ground off Horn Reef and the Sylt, in the latter end of March and through April on the shoal of the Dogger-Bank, during the summer on the flat of the Well and below the Northwest Rough, and in October and November they congregate in immense numbers on the northeast part of the Great Fisher Bank, staying on these grounds till the latter end of January, in order to spawn. They are also found thinly scattered about the sea all the year round. This fish is greatly on the decrease.

The skate is a nonmigatory fish, inhabiting deep water. The eggs of this fish are a long time in developing. As this fish has at no time been what may be termed plentiful about the North Sea, it might be thought that, with the various devices for capturing it and the fewness of its eggs, it would soon become extinct. But it appears that, while many of the more prolific are gradually decreasing, the skate holds its own, as it were; and its cousin, the ray, is, if anything, increasing. This is partly owing to the formation of the egg, which, from its size, combined with the long, stiff tendrils projecting from each corner of it, renders it extremely difficult, if not absolutely impossible, for any of the larger fish to swallow, while its tough covering preserves it from smaller enemies.

The ray is gregarious and arrives in vast quantities in March on the Westernmost Rough and about the Dudgeon and Dowsing Sands. It is also found at the same time off Borkum Reef. It chiefly inhabits the southern parts of the North Sea, and in its spawning habits it somewhat resembles the skate.

The spawning of the sea fish in general is a subject about which very little is definitely known; and it is very remarkable, considering the millions of eggs there are in the sea at periodical times, that none are ever seen, except those of the herring. Sea fish are continually shifting about in search of food, and when it is plentiful they will make what may be termed a halt for a short time. In these movements in search of food they are very irregular, but in their annual spawning migration they are very punctual. The same instinct that guides them in search of food also leads them, at the appointed time, to suitable grounds or waters in which to deposit their spawn. In mentioning both grounds and waters it should be understood that some species deposit their ova on the bottom, and this is always deposited among gravel or on stony or rough ground, while the spawn of those species which congregate on fine sandy or muddy grounds floats or is held in suspension for some space of time.

Among the former, more particularly, are the herring, the brill, and the lemon sole, although the two latter are open to conjecture. The other floating-spawn species comprise principally the cod, haddock, plaice, sole, and turbot. In the deep-sea trawling business one of the most necessary things

is frequent casting of the lead, clean grease being applied generally every time. This is done in order to test or find the quality of the bottom; anything unusual is immediately noticed, and, although this can not be looked upon as an infallible rule for finding spawn or ova on the bottom, it is not to be lightly passed over. It is well known that many of our fresh-water fish deposit their spawn on gravel, etc., on the beds of rivers or brooks, where it is not difficult to find it. In this there is an analogy to the herring, which always deposits its eggs on gravelly grounds. The herring has an affinity for particular grounds on which to spawn, steep bank sides, such as are found on the spits of the Dogger-Bank, being favorable places. It has before been mentioned that at this time haddock congregate in immense shoals in order to feed on the ova of the herring. In general the spawn in their stomachs is intermixed with small stones, in the proportion of one-third stones to two-thirds spawn. When fishing for these haddock, it is not uncommon to find herring spawn imbedded in the grease on the sounding lead. This is a strong argument that the eggs lie on the bottom, and also that if the lead drops on any other kind of eggs it will bring them up.

Plaice deposit their spawn a long way northerly, principally on the Great Fisher Bank; but the young fish are found on the German coast many miles to the southward and eastward from the spawning ground. Many sole deposit their eggs as far north as latitude 54°, but young sole are found principally in the southern parts of the North Sea. Young turbots are also apparently more southern than the full-grown fish.

The young haddock and cod are not found so southerly as the flat fish. This is owing to their eggs sinking or else maturing more quickly than those of the plaice.

The general spawning grounds of deep-sea fish are northerly from their usual feeding grounds. This also favors the theory of floating spawn. The indraught of the currents in the North Sea being stronger to the south than they are to the north, the young fish when hatched are in grounds where they will find abundance of suitable food, whereas, if the eggs were deposited 3° or 4° further south, the principal part of them would be carried up into the narrow parts of the North Sea, a great portion of which is barren and hard ground and contains no suitable food whatever for young haddock.

Trawling does not, in the opinion of some, injure the spawn of sea fish; in fact, it is thought that it supplies an argument in favor of floating spawn, because, if the spawn were on the bottom, in all likelihood some would get entangled in the ground rope or about the net in some way or other so that it would be noticed.

The stomachs of a large number of bottom fish, both large and small, have been examined (not microscopically) at all times of the year, in order to see whether they feed on spawn, and the only instances are the haddock and dab, which are filled with the eggs of the herring.

From these observations the conclusion is arrived at that the spawn of cod, haddock, plaice, and sole floats or is held in suspension for some space

of time; and, although it may in time sink, it will be so scattered that to drop the lead on it would be almost a miracle.

Apparently but a very small percentage of the eggs deposited arrives at maturity. No doubt a large proportion of them are devoured while in their floating condition by herrings, sprats, and young mackerel, which abound about these parts of the sea; and, as in the latter end of the egg existence it is to be surmised they will sink, many will be immediately pounced upon by the multitude of small crabs and other forms of sea scavengers. It might be expected that the very young fish or small fry would sometimes be found in the stomachs of the larger fish, but no instances have been detected. It may be that the young fry, being so delicate and tender, will quickly become digested.

Taking sea fish generally, they are not so long in growing to their full size as was formerly supposed. As a rule, from four to six years is sufficient for them to arrive at a state of maturity or reproduction. If it were settled how long the different species of eggs are in hatching out and what the small marine insects with which the bottom of the sea is literally covered feed upon, many things that are at present perplexing would soon be understood.

FISHING STATISTICS.

The following table, compiled from the latest official returns, relates only to fishing vessels of the first class. A comparison is instituted which will serve to show the rapid advancement of the steam-trawling trade. The year 1888 may be taken as the period when the sailing trawlers reached the highest point in numbers and activity. In the three years which have since elapsed the adoption of steam fishing vessels has proceeded by leaps and bounds, with the inevitable consequence of a depreciation in value of the sailing trawlers, which has been enormous all round and in a multitude of instances absolutely ruinous. The statistics deal with every fishing port in the United Kingdom, and are arranged in what may be called national divisions.

Table showing the sail and steam trawlers of the United Kingdom.

Port.	Sailing trawlers.		Steam trawlers.	
	1888.	1891.	1888.	1891.
England.				
Aberystwith	2	3	1	1
Barnstaple	2	3	1	.....
Beaumaris	3	3	.....	.....
Berwick	123	97	3	1
Bedford	5	4	.....	.....
Boston	12	8	10	20
Bristol	.....	.....	.....	4
Cardiff	4	1	9	11
Cardigan	.....	.....	.....	1
Carnarvon	12	12	.....	.....
Colchester	88	77	.....	1
Cowes	1	2	1	.....

Table showing the sail and steam trawlers of the United Kingdom—Continued.

Port.	Sailing trawlers.		Steam trawlers.	
	1888.	1891.	1888.	1891.
England—Continued.				
Dartmouth and Brixham	220	245	.....	.....
Deal	5	5	.....	.....
Dover	24	18	.....	.....
Falmouth	3	3	6	4
Faversham	20	21	.....	.....
Fleetwood	42	66	.....	.....
Folkestone	9	8	.....	.....
Forvey	32	76	1	1
Grimsby*	775	725	19	85
Guernsey	2	1	.....	.....
Harwich	12	11	.....	.....
Hartlepool	1	2	1	2
Hull*	467	346	32	131
Ipswich	2	2	.....	.....
Jersey	16	11	.....	.....
Lancaster	4	2	.....	.....
Littlehampton	3	3	.....	.....
Liverpool	43	39	1	6
Llanelly	1	2	2	2
London	90	54	24	18
Lowestoft	396	407	3	1
Lynn	30	32	2	2
Maldon	8	5	1	1
Maryport	1	2	.....	.....
Middlesborough	.....	.....	1	1
Milford	12	14	1	2
Newcastle	1	.....	7	3
Newhaven	6	7	.....	3
Newport	1	1	5	3
Penzance	58	145	3	1
Plymouth	84	90	.....	.....
Poole	.....	1	1	.....
Portsmouth	20	18	.....	.....
Ramsgate	141	176	.....	.....
Rochester	5	4	.....	.....
Runcorn	1	.....	.....	.....
Rye	32	28	2	2
Scarborough	84	69	15	16
North Shields	75	14	7	71
South Shields	.....	.....	12	11
Shoreham	15	10	.....	.....
Southampton	18	29	.....	.....
St. Ives	97	94	.....	.....
Sunderland	1	.....	20	11
Swansea	1	.....	2	5
Wells	5	6	.....	.....
Weymouth	1	.....	.....	.....
Whitby	22	11	1	.....
Whitehaven	15	14	.....	.....
Wisbeach	.....	2	.....	.....
Woodbridge	12	8	.....	.....
Yarmouth	427	454	3	1
Total, England	3,592	3,491	197	423

* Both in the consular district of Hull.

Table showing the sail and steam trawlers of the United Kingdom—Continued.

Port.	Sailing trawlers.		Steam trawlers.	
	1888.	1891.	1888.	1891.
Isle of Man.				
Castletown	100	94	.....	.....
Douglas	187	281	.....	2
Ramsay	11	9	.....	.....
Total, Isle of Man	298	384	.....	2
Scotland.				
Aberdeen	152	150	5	26
Alloa	1	4	.....	.....
Arbroath	33	33	.....	.....
Ardrossan	5	4	.....	.....
Ayr	1	2	.....	.....
Banff	825	717	.....	.....
Broadford	.....	1	.....	.....
Campbeltown	47	36	.....	.....
Castlebay	1	10	.....	.....
Dundee	55	54	4	5
Glasgow	.....	.....	4	4
Grangemouth	1	1	1	.....
Granton	.....	1	20	25
Greenock	32	20	1	1
Inverness	472	398	2	.....
Kirkaldy	446	386	.....	1
Kirkwall	119	110	.....	.....
Leith	157	135	19	15
Lerwick	380	319	.....	1
Montrose	118	104	4	3
Perth	6	5	.....	.....
Peterhead	567	503	.....	.....
St. Margaret's	2	5	.....	.....
Stornoway	184	184	.....	.....
Stauraer	1	1	.....	.....
Troon	.....	1	.....	.....
Ullapool	2	5	.....	.....
Wick	535	499	.....	.....
Total, Scotland	4,142	3,688	60	81
Ireland.				
Ballina	1	1	.....	.....
Belfast	40	28	.....	.....
Cork	72	65	2	2
Drogheda	2	3	.....	.....
Dublin	140	167	1	.....
Galway	17	13	.....	.....
Limerick	9	6	1	.....
Londonderry	4	6	1	.....
Newry	40	28	1	.....
Skibbereen	87	88	1	.....
Sligo	3	5	1	.....
Tralee	18	24	.....	.....
Waterford	13	25	.....	.....
Westport	1	3	1	1
Wexford	7	6	.....	.....
Total, Ireland	454	458	9	3

The preceding table includes trawling vessels, those engaged in the cod fisheries by hook and line, and the largest sized vessels occupied in the drift and other methods of net-fishing. Two-thirds of the aggregate number relates to trawl-fishing entirely. Although the number of steam trawlers has doubled itself during the past three years, with an effect which is regarded at the chief fishing ports as well-nigh revolutionizing the trawling trade, the steam vessels as yet bear only an insignificant comparison, in point of figures, with the sailing vessels.

When the working operations are, however, taken into account, the recorded number may be multiplied four to five fold in relation to the work performed by the sailing trawlers. Hull, Grimsby, North Shields, and Boston, in England, and Aberdeen and Granton, in Scotland, are adding to their steam fleets as fast as the builders can turn the vessels out of the building yards. Where the number of steam trawlers remains stationary or has been reduced, want of capital, rather than lack of enterprise, may be ascribed as the reason, save in the case of London, where the reduction is probably due to a disposition on the part of the fish merchants to leave the active trade to the great fishing ports and to content themselves with the position and profits of middlemen.

The total number of men and boys employed directly in the fisheries of the United Kingdom may be set down at 130,000, and the number of fishing vessels of all sizes at between 35,000 and 40,000. These figures bear but a faint relationship to the total number of persons who obtain a livelihood or wealth immediately from the fishing trade, from the capitalist down to the street vender. If to every single fisherman who plies his calling at sea an addition of ten or a dozen is made of persons ashore who subsist by the fish trade, the aggregate would reach some million and a half, and would still probably be considerably within the mark. The ramifications of the trade are almost numberless. Besides those which present themselves to the mind without enumeration, in later years various manufactures from fish products have been established, and these industries give employment to large assemblages of work people. Besides furnishing food for man, the fish trade has introduced a variety of patented foods for dogs, poultry, etc., while fish-oil refineries and the manufacture of fertilizing compounds for the soil from fish offal are extensive and flourishing industries at most of the great fishing ports.

The capital invested in this enormous maritime industry and in the varied enterprises indirectly associated therewith by the people of the United Kingdom is estimated at between £40,000,000 and £50,000,000. Of this sum the trawling trade probably contributes fully one-third, while in the latter case great additions are being made almost weekly.

The quantity of fish annually caught in British waters is estimated to amount to 600,000 tons, representing a total value of £15,000,000 to £20,000,000.

Dealing more particularly with the trawl fisheries, Grimsby, which is styled the metropolis of the fish trade, as also the largest fishing port in the world, furnishes figures which show the enormous development of this branch

of the industry in late years. Prior to 1854 little or no fish were dispatched from Grimsby inland, the railway returns showing only 453 tons so dealt with. About 1857 came the introduction of ice for the preservation of fish, and by 1860 the fish traffic had increased tenfold, the railway freightage showing 4,537 tons. The next decade increased these figures greatly, the bills of lading in 1870 giving 26,324 tons; and those of 1880 gave 46,931 tons. By 1885 the total had risen to 70,658 tons, and the following table shows that even that enormous figure barely touched the high-water mark:

Table showing the amount of fish imported into, and dispatched inland from, Grimsby from 1886 to 1890, inclusive.

Year.	Imports.	Dispatched by rail.
	Tons.	*Tons.*
1886	73,620	69,609
1887	71,008	66,698
1888	72,987	68,884
1889	70,053	66,280
1890	71,382	67,974

The returns for 1891 were not available for this report, but it was confidently expected that the quantity of fish imported into Grimsby would reach for the year nearly 80,000 tons.

Side by side with this remarkable development of the Grimsby fish trade in general and the trawling operations in particular another industry has grown in like proportions. It deserves notice as one of the many collateral enterprises brought into existence by the fishing trade. The importation of ice in 1880 had grown from the smallest proportions to the considerable magnitude of 31,630 tons, and thence to 60,500 tons in 1890. These figures relate alone to importations from the Norwegian lakes, and do not take into account the local manufacture which, within the past two or three years, has been developed as a new enterprise.

The Grimsby pontoon, or fish market—a quarter of a mile long—during the summer sales, when the commission agents make their purchases for dispatch by rail, presents a sight unequaled, not simply at any other fishing port, but in the whole world. Billingsgate, the widely known London fish market, where the daily sales vary from 200 to 300 tons, has to yield the supremacy in the variety of the fish offered and in the activity of business to Grimsby, whence it is no unusual thing on the eve of fast days to dispatch from 600 to 800 tons of fish in one day. In addition to this, probably half that quantity is weekly dealt with for home consumption, or for the manufacture of the various products already mentioned, or is carted away as refuse unfit either for food or to be otherwise utilized.

TRAWL-FISHING IN AMERICAN WATERS.

In recent years the eyes of British trawl fishermen have been wistfully turned towards the Atlantic, Pacific, and Alaskan waters of the United States.

More earnest and anxious has that gaze become since the introduction of steam trawlers and the consequent depreciation in service, as well as in value, of many hundreds of splendidly built and equipped sailing vessels, which only three years ago were looked upon as a rich investment and as the perfection of fishing craft. On several occasions, I am told, the project has been mooted of transporting across the Atlantic two or three fleets of sailing trawlers, with their crews, in order to strike out new fishing grounds and render the unproductive capital invested so enormously in these vessels again profitable.

In the opinion of the most practical and thoughtful of the British trawl fishermen, especially of those belonging to the port of Grimsby, immense stretches of profitable trawling grounds are to be found in American waters. In the absence of positive information, those ideas are purely speculative, although it is sound reasoning to expect similar results from like conditions. The harvest of the sea is far more productive than the most fertile harvest on shore. There are no waste places in the water, as there are on the land, and it seems the part of true wisdom and economy to benefit mankind by supplementing the insufficient returns of the soil, which has to be cultivated under infinite exertion, by those of the watery empire, which yields abundantly without the labors of seedtime. In the opinion of English fishermen who have some aquaintance with the American waters, the conditions presenting themselves to a superficial glance are such as to promise valuable returns to well-furnished and skillfully manned trawling fleets. Efforts in that direction have, according to information reaching me through the medium of the English press, already been made by emigrant fishermen in the vicinity of Vancouver Island, with almost fabulous results as regards the most valuable kinds of fish; and, remembering the success which the Grimsby steam trawlers have met with off Iceland, the Alaskan waters seem to hold out probabilities of even more ample returns. But, if this were not so, there remains the immeasurable exploiting grounds stretching from Maine to Florida and again along the shores of the Gulf of Mexico to Texas, where the conditions of the climate, of the coast line, and presumably of the sea bottom, teeming with marine natural food for fishes, would suggest a never-failing supply of the most valued and valuable kinds of trawl fish. In the waters of Massachusetts Bay and those of Cape Cod there are vast areas where the trawlnet could be profitably used, as the bottom is peculiarly favorable. The Pacific coast of the United States, along the greatest part of its vast extent, adds to the probabilities of enormous returns if only the vessels are capable and the crews experienced in trawling operations.

The considerations which enter into the question are such as could be readily determined and at a comparatively small expenditure. The depths of the water, the nature of the soil, and the character of the sea flooring are the conditions which practical fishermen would first set out to determine. These points definitely settled, the remaining questions would admit of speedy solution, either in setting the trawl to its effective work at once or in aban-

doning the ground as impracticable. It may be taken as certain that fish abound in such places, and, if approachable, are to be taken in quantity as large and in kind as valuable as around the British islands. Nor can it be imagined that the habits of the peculiar kinds of trawl fish mentioned in a previous section or their American congeners vary so greatly from east to west as to place them out of the reach of the trawlnet.

It would be necessary, before making an attempt at trawl-fishing on any large scale, to determine what are the probabilities of success by a process of survey, which need not be a costly one, under the observation of persons well acquainted with the trawl-fishing trade. The catching of fish, however, is one thing and their commercial value another; but it may be assumed that most of the conditions which have established a successful and remunerative trade in the one country exist, in greater or less degree, in the other. The three essentials in profitable trawling are: First, reasonable outlay in plant and service; second, an ample supply of fish; and, third, easily accessible markets for the disposal of the commodity when obtained. On our Atlantic seaboard, throughout its vast extent, the second and third conditions are presumably existent in the one and certainly so in the other. On the Pacific coast, while fish might be abundant, the markets would be at a greater distance, as would be the case in Alaskan waters. The established use of ice for the preservation of fish and the scientific ingenuity of our people would speedily solve questions of detail such as these, and they would be aided by the extreme probability that in scarcely any instance would the operations require to be carried on at the distances from shore involved in the North Sea operations.

Under such circumstances the fish would more quickly reach the consumer if the land passage were not too long; and, if it were, the fact is paralleled in the case of sailing trawlers, which have often several days' passage from the fishing grounds to the ports, and still deliver their cargoes in good marketable condition.

Much that has been said as to fishing along the coast line applies to the project of trawl-fishing on our great lakes. The primary points to settle are the depth of water, the nature of the bottom, and its freedom or otherwise from obstructions which would render trawling a useless and costly experiment. With great expanses of unobstructed banks, which in a small measure may be compared to the extended prairie lands, the loss of gear in the North Sea by fouling some obstacle on the sea bottom is considerable, and is an item of expenditure which must be taken into calculation in all such ventures.

The strength of the gear withstands immense strain, and stones of considerable size and weight, as well as other loose obstructions of ponderous character, are sometimes trawled up. But wrecks and rocks are immovable, and their resistance surely exacts the penalty of a total loss of gear, which implies the trawlnet with all its appliances and probably 50 or 100 fathoms of the warp by which it is towed.

Fresh-water fish do not mature so quickly or reach the size of marine fish; but they possess a delicacy of flavor which is not found in those dredged up from the sea. It is hardly likely that they approach in numbers the sea fish, simply because fresh water does not provide the quantity and variety of food which the ocean supplies in myriads of forms and substances. Where food exists there will fish be found, guided thither by natural instincts and cravings; and the larger in quantity and attraction of the former, the greater in number and commercial value will be the latter. Trawl-fishing on these lakes would not present the same attractions to the North Sea fishermen as would the adventure on the seacoasts, but such want of regard must be set down mainly to their entire ignorance of the physical conformation of the lakes and the nature of the water. On the other hand, these fishermen have had ample evidence that the same kinds of fish which are caught by the trawl in the North Sea abound in the shoal waters of the North Atlantic Ocean. The fact that these fish are not caught by the hook and line under the present mode of operations is not at all a detrimental circumstance in this consideration, as it is a very noticeable feature in the North Sea fishing operations that scarcely any of the ground trawl fish are taken on the hooks by the line fishermen.

It is a matter of surprise to British fishermen that public or private enterprise in the United States, where the people are surrounded by seas unquestionably rich in fish, unless Nature has unaccountably belied herself, has hitherto done so little towards the gathering of these perennial harvests by the speediest, most effective, and most profitable of all methods of fish-catching—the use of the trawlnet.

BYRON G. DANIELS,
Consul.

UNITED STATES CONSULATE,
Hull, January 7, 1892.

THE STREETS AND ROADS OF BOHEMIA.

*REPORT BY CONSUL HAWES, OF REICHENBERG.**

Public streets and roads which are not supported by the Government treasury are divided into country roads, district roads, and parish roads. Country roads are those so declared by law on account of their importance; district roads are those so declared by the district authorities, or, in special cases, by the Government authorities; parish streets or ways are all other open thoroughfares which belong to neither of the above classes and are not private property.

Bridges and other artificial works belong to the roads in which they lie, unless, on account of great expense or importance, it is decided otherwise.

*Through inadvertence in the Department this very valuable report was omitted from the special volume on streets and highways in foreign countries.

DISTRIBUTION OF COSTS.

The cost of the creating and keeping up of country roads is borne by the country fund. Whether a district through which a country road runs shall participate in the expense and the proportion thereof is decided in each case. Expenses of district roads shall be met by the district authorities. Expenses, when not otherwise provided for, belong to the district. The expenses for building or maintaining especially expensive district or parish roads may be paid from the district or country fund, as decided by the authorities.

If the inhabitants of a village desire that a road should run through their village which would otherwise only pass the place, the village must pay the extra cost.

If such a village collects toll for the pavement or a bridge, the village has to provide for the maintenance of the thoroughfare.

Snow-cleaning of the country or district roads must be done by that parish located not over 7.5 kilometers from the road. The district and country authorities determine which parish shall do it, and also fix the compensation for the work. Snow-cleaning of the country roads in the village is to be done by the parish; exceptions are sometimes made in cases where a village is spread over a great territory.

The management of the construction and maintenance of country roads should belong to the country authorities, but this is usually transferred to the district authorities.

Every country road collects toll. District roads collect toll only when they are supported by the country fund. Parish roads usually collect no toll. Permission to collect such toll is occasionally granted, however, on account of unusually expensive maintenance of the road. Bridges usually collect no toll. Exceptions may be granted by the country authorities in the following cases:

(1) If a bridge is declared to be an independent one, *i. e.*, if it does not belong entirely to one road or street.

(2) If excessive building or maintenance expenses make it necessary.

The money received from tolls is paid to the fund which provides for the road or bridge. The amount of toll for country and district roads for a distance of 8 kilometers is as follows:

	Cents.
Each draft animal in a carriage or wagon	1½
Each heavy draft animal or others not in carriage or wagon	0½
Light cattle, each	0¼

Animals carried in the hand or in a wagon are free. The toll for bridges is the same. The toll for parish roads, if such be collected, shall not exceed half the rate fixed for country or district roads. Light cattle never pay more than one-fourth of a cent. Horses, cattle, mules, or donkeys not in wagons or carriages are considered as heavy animals; calves, sheep, goats, pigs, etc., are considered as light animals. The position of a tollgate on a country

road is determined by the country authorities; that of other roads by the district authorities. The distance between the various tollgates is usually 8 kilometers.

The inhabitants of a place where a tollgate is located pay only when they enter the town. Villages built adjoining or separated only by a bridge are considered as one village. He who refuses to pay toll or drives on another road to avoid it is liable to a fine and must pay five to ten times the fixed tax.

Country roads are under the supervision of the country authorities, the district roads under that of the district authorities, and parish roads under that of parish authorities.

The whole or part payment of the expenses for district or parish roads out of the country fund can only be granted for such roads as are especially important for the traffic of the whole country. The expenses for country roads are paid from the country fund.

BUILDING ROADS.

Country roads.—The width, excluding the ditches, is 6.5 to 7.5 meters, according to the traffic. The width of the foundation is 4.5 to 5 meters and the depth 25 to 30 centimeters. Upon this is placed a layer of broken stone of the same width and a depth of 10 to 15 centimeters. The whole is covered with coarse sand or gravel from 3 to 5 centimeters deep. The bottom of the ditches is half a meter broad, and the slope of the sides is from 30 to 35 degrees. Roads of 6.5 meters must have a convexity of 15 to 20 centimeters; those of 7.5 meters width a convexity of 20 to 25 centimeters. The ascent should only be 5 centimeters for each meter, and, in case of very unfavorable territory, shall not exceed 6 centimeters. Heavier grades are only allowed over mountain roads, and then shall not be more than 100 meters in length.

District roads.—The width, excluding ditches, is 6 to 6.5 meters, according to traffic. The foundation should be 4 to 5 meters broad and 20 to 25 centimeters high. Upon this is placed a layer of broken stones of the same width and 8 to 10 centimeters high. The whole is covered with rough sand or gravel. The bottom of the ditches should be 40 centimeters broad and the slope of the walls 35 to 45 degrees. The convexity of roads of a width of 6 meters should be 10 to 15 centimeters and that of roads of 6.5 meters 15 to 20 centimeters. The grade must not exceed 6 centimeters per meter, or, if the locality is unfavorable, may be 8 centimeters per meter. Heavier grades are only allowed in extremely unfavorable localities and where roads are to be used by light vehicles only. This is decided by the country authorities.

If the stones used are especially dear, or when it proves otherwise advisable, then the road may be macadamized. In this case the broken stones are piled up and rolled until the pavement of country roads reaches a height of 25 to 30 centimeters and that of district roads 20 to 25 centimeters. On both sides of the macadamized roads must be placed large stones to prevent the

broken stone being pushed aside when rolled. The whole road is then covered with rough sand and must be wet and rolled until it is level and hard.

If a road runs through a village and can not, on account of local conditions, have the width as above stated, then paved gutters may be substituted for the ditches.

Highways must be provided with safety stones (stone posts to prevent driving off dangerous places). They must be 1 to 1.25 meters high and 1.75 to 2.5 meters distant from each other. If the roadbed is very high or runs alongside of a river or a ravine, then stones must be placed closer together (1 to 1.75 meters). Strong railings may also be used, or trees will meet the requirement if they have a thickness of 9 to 10 centimeters.

The country authorities authorize the district board to supervise the country roads, and the district board authorizes one or several of its members to watch the maintenance of the road. These members must report as to the condition of the road in the meeting of the district board. In important matters the decision of the country board should be demanded by the district board. The district board has further to ask the approval of the country authorities in any conclusion at which they may arrive.

The district board must prepare estimates of the expenses for the coming year and submit them to the country authorities.

Parliament fixes the amount for building and maintaining country roads. The amount is based upon the expense of former years, and the country authorities notify the various districts of the amounts allotted to them, at the same time opening credits at the imperial and royal tax offices. The country authorities also sometimes give directions as to how the money shall be expended.

In all cases where technical knowledge is required the district board must engage a person versed in such matters, in order to assist such members as are in charge of the country roads. The selection of such a person must be approved by the country authorities, who also give him the necessary instructions and provide for his salary.

Men shall be employed to keep the roads in good repair. Each man shall have charge of a distinct part of the road (usually 2.6 kilometers). These men must be on duty during the daytime and keep the footpaths and ditches free from grass, stones, etc. Grass growing in the ditches may be sold for the benefit of the fund for road maintenance, but ditches must not be used for pasturage. Stones to be used during the year must be delivered in the fall; they are piled up on one side of the road to be later broken. They shall be used in fall or spring, or, if absolutely necessary, also in summer. Before stoning the road it must be first cleaned of mud. The stoning should be done in damp weather and only for short distances at a time. The parts of the road so stoned should immediately be covered with sand or gravel. Roads should be rolled each year to make them hard.

District roads are under the supervision of the district board, which is responsible for their good condition. A certain number of workmen must

be engaged to keep in order those district roads which are supported by Government funds or those which collect toll.

The district authorities must report at the end of each year as to the length of new roads built, the cost of maintenance of the district roads, and how much toll has been collected; also the number of trees planted on such roads, in order to enable the country authorities to make up complete and reliable maps.

The management of the parish roads is in the hands of the parish authorities, who are obliged to keep them in good order, especially those which connect various villages.

In order to prevent roads from being ruined, only breaks and drags are allowed to be used on vehicles. Drag chains must never be used; "plow drags" and trunks of trees used as drags may only be used when snow is on the ground.

All roads must have trees on both sides, and the law prescribes that trees with broad-spreading branches shall be chosen.

COST OF ROADS.

The cost of constructing country roads varies greatly in accordance with difficulties encountered, distance from source of supply of material, etc. In this neighborhood the stone used is basalt, which is admirably adapted for road-making.

The cost of building a road 2,311.3 meters long and 6 meters broad near here was 9.86 florins* per meter, or 22,800 florins, divided as follows:

Work.	Cost.	Work.	Cost.
	Florins.		*Florins.*
Digging up the ground	1,242.15	Stone walls	4,912.11
Transportation of material	631.80	Safety posts (stone)	938.00
Leveling the ground	277.36	Footpath	112.00
Foundation	4,622.60	Other expenses	207.74
Layer of broken stones	3,698.08	Total	22,800.00
Layer of sand	554.72		
Drains	5,603.45		

Another road, 4,047 meters long, cost 7.46 florins per meter, or 30,200 florins. A third road, 2,125 meters long, cost 6.35 florins per meter, or 13,500 florins; and, for the sake of comparison, I will again give the items:

Work.	Cost.	Work.	Cost.
	Florins.		*Florins.*
Digging up the ground	1,510.25	Drains	527.00
Transportation of material	1,049.75	Safety posts	440.00
Leveling the ground	255.00	Other expenses	113.00
Foundation	4,250.00	Total	13,500.00
Layer of broken stone	4,845.00		
Layer of sand	510.00		

*1 florin is about 40 cents.

In this case, although stones cost more and transportation expenses were increased, owing to the distance from the quarry, yet, owing to the nature of the land, a great saving over the first road was made in the matter of drains, stone walls, safety posts, etc.

The above shows how greatly the cost varies in accordance with the locality. The effect of improved public roads upon land values would vary still more according to local conditions, and I find it impossible to furnish data on this point which would have any practical value.

CITY STREETS.

In this industrial neighborhood, where heavy drays loaded with merchandise are constantly passing, only one kind of street would answer the purpose; consequently, all of the pavements are made of granite blocks set in a sandy bed.

The cost of paving the streets of Reichenberg per square meter is about as follows:

	Florins.
Leveling the ground	0.30
34 blocks, at 6½ kreutzers each	2.21
Sand	.20
Labor	.50
Total	3.21

This seems to be a very fair average, as I have also learned that the cost of similar stone pavement in Kratzau, a neighboring town of 3,600 inhabitants, is 3.035 florins per square meter.

JNO. B. HAWES,
Consul.

UNITED STATES CONSULATE,
Reichenberg, February 21, 1891.

HOP-GROWING IN BOHEMIA.

REPORT BY CONSUL RUBLEE, OF PRAGUE.

QUALITY OF HOPS.

Large breweries the world over always keep in their storehouses at least a small quantity of Bohemian hops, though the price paid is often a high one. This fact is a high tribute to the excellence of the Bohemian product, the superior qualities of which are attributed to peculiarly favorable conditions of soil and climate and to careful and time-tried methods of culture. Since the sixteenth century the aromatic plant has had its home in Bohemia, and its fame, then already established, has been maintained and steadily increased. In the archives of the cities of Auscha, Saatz, and Rakonitz are preserved records relating to the export of hops, some of which date back to 1568, and these and later documents attest to the early prosperity and continuously flourishing condition of hop culture in these regions. Not only the natural advantages of climate and soil favored the

development of hop culture, but the fact that brewing was extensively carried on in Bohemia, as well as in the immediately surrounding countries, created a large demand for hops and gave a lively impulse to the hop-growing interest from the start. The same conditions prevail at the present day, though the element of competition from other lands has become more active by the increased facilities of transportation. Still hop-growing continues to occupy a position of the first importance among the various forms of agriculture in Bohemia.

THE HOP REGIONS.

The hop gardens are not extensive, and hop-growing is confined to a comparatively small area, while the so-called hop belt is a limited one. The total area under hop cultivation amounts, according to present statistics, to about 26,000 acres, and this is divided into districts known under the names of the cities about which they center. The largest and the best known is the Saatz district, with an area of about 10,000 acres. The neighboring district of Rakonitz, with an area of about 6,000 acres, produces a grade of hops very similar in quality to that of the Saatz district; then come the Auscha district, with an area of about 4,000 acres, the product of which is not considered as good as the Saatz hops, and the Dauba district, with an area of some 2,500 acres, producing an inferior grade of hops. The most celebrated of these districts is the Saatz, and the hops grown there are claimed to be the best in the world. The hops of the Saatz district are again subdivided into *Stadt*, *Bezirks*, and *Kreis* classifications, according to quality, and the *Stadt*, or city, hops are the highest grade, while the *Kreis*, or circuit, hops are supposed to be somewhat inferior. By some it is thought that the classification is in a measure arbitrary, but the city hops invariably command a few florins more per bale than the other grades.

In the Saatz and Rakonitz districts the hops are grown under similar conditions, and the product differs very little. The hops grow in a ferruginous, reddish clay soil along the banks of the River Eger, while this region is protected from the cold north winds by a spur of the Erzgebirge, and the only prevailing winds are from the west and southwest. The elevation is about 800 feet above the sea level and the mean temperature during the year about 7° Réaumur. The excellent quality of the hops is ascribed to the peculiar properties of the soil and to the very slight atmospheric depression.

The hops of the Saatz, Rakonitz, and Auscha districts are all known under the general name of red hops, while the Dauba hops are called green hops. The distinguishing marks of the Saatz hops are a longish flower, closed at the top with innumerable leaflets—from one hundred to one hundred and fifty—which are as soft as velvet to the touch. They are characterized by a delicate, spicy aroma, and the bitterness is extremely pleasant. The flower, when ripe, is greenish yellow, with a slight reddish tinge. Dauba hops, the type of green hops, have a round flower with fewer leaflets—from forty to sixty—and the odor exhaled is somewhat like garlic. The color of the ripe flower is yellowish green. Red hops form three-fifths, and green hops two-fifths, of the total crop.

Outside of the regions above mentioned the cultivation is carried on sporadically and on a small scale, and the product does not figure sufficiently to have a special name. The average crop in Bohemia is 9,000,000 pounds, in round numbers. The average yield per acre is not large. In the Saatz district the yield per acre is between 350 and 450 pounds, while in the Auscha district, in a good season, there is a yield of 600 pounds to the acre.

The labor required for the cultivation is cheap, the wages paid being small, as in all employments in Bohemia. Hop-pickers, for instance, receive 50 kreutzers (20 cents) for a day's labor.

HOP SCHOOLS.

With a view to securing a uniformly higher standard of hop culture, there have been established within the last two years technical schools for the study of hop culture at Rakonitz and at Laun. These schools receive financial support from the government of Bohemia and also from the cities and districts where they are located. Being situated in the midst of the hop districts, every opportunity is afforded for practical work. In connection with the Rakonitz school there is an experimental hop garden where innovations in cultivation are tried. The courses of instruction offered are both for students attending regularly and for farmers desiring special instruction. These latter special courses are short and extend for three or four weeks only, while the regular course is of a year's duration. Among the regular courses of instruction are hop culture, theoretical and practical, from a botanical and practical standpoint; treatment of the soil, choice of the young plants, fastening of the poles, selection of poles, drying of the hops, hop-picking, hop-sorting, etc. The attendance at the schools has been considerable so far, and not a few students have come from other countries. The results are satisfactory, and it is expected that hop culture will show a decided improvement as the schools become older and the students turn the knowledge acquired to practical use.

The foundation of schools for the study of hop culture also meant that Bohemian hop-growers felt the need of taking steps for further improving the methods of cultivation in order to maintain the high reputation of their product. The reputation of Bohemian hops was likewise endangered by the sale of inferior hops under the Bohemian name, and to prevent this a law has been passed providing that every bale of hops produced in Bohemia and put on the market must have an official certification. Great stress is laid on the carrying out of this law, and each bale must be sealed with an official district seal in the district in which the hops are grown. This provision is sufficient to prevent fraud at home, but it is alleged that many of the hops sold to the export trade as Bohemian hops are in reality Bavarian hops or some inferior quality.

EXPORTS OF HOPS.

It is estimated that about half of the total crop is consumed in Bohemia, and the balance is exported. England, Germany, France, and Italy are

among the largest foreign buyers in the Bohemian hop market, but all nations participate in the trade. The declared value of the Bohemian hop export to the United States during the last six years was as follows:

Year.	Value.	Year.	Value.
1886	$177,003.97	1889	$59,303.10
1887	97,037.94	1890	55,445.90
1888	56,284.51	1891	35,994.07

Hop-dealers have not expected much trade with the United States since the tariff has been placed at 15 cents per pound; and their expectations have been realized; but there are some breweries that secure stocks of Bohemian hops regardless of the price.

DUTY ON HOPS.

The duty on hops imported into Bohemia is not high, having been about 2 cents a pound, while under the new tariff taking effect February 1, 1892, the rate has been reduced to about 1½ cents per pound. The import is, however, inconsiderable, German hops being used to some extent in the breweries.

HOP PRICES.

The price of hops varies greatly in different years and fluctuates considerably during the same season, as instanced in the present year, prices having risen very materially since the opening of the season. Early in September the quotations for the best quality of Saatz hops were from 70 to 75 florins per bale, while the same hops sold in December at between 95 and 100 florins per bale. The abundance or scarcity of the crop has the greatest influence on prices, and the demand both at home and abroad is also an important factor in fixing the value. Saatz is the great center for hop-dealers, and a lively trade is carried on during the fall and early winter months. It is no uncommon occurrence in Saatz for prices to go up 20 per cent over night, on account of the simultaneous presence of a large number of buyers. Bohemian hops are sold in bales of 50 kilograms (110.23 pounds), and the hops from the Saatz district command from 15 to 30 per cent higher prices per bale than those from the Auscha district. Looking over prices for the last twenty years, it will be found that the average value of the best Saatz hops has been 142 florins per 50 kilograms, while the highest price paid during that period was 353 florins per bale, in 1876, and the lowest 65 florins per bale, in 1889. Hop-growers claim that the prices realized during the last few years have not been sufficient to make the raising of hops profitable, and that part of the ground thus cultivated will be given up to other forms of agriculture before long. There is at the present time, however, not the slightest indication that such a course will be adopted.

WILLIAM A. RUBLEE,

UNITED STATES CONSULATE, *Consul.*

Prague, December 21, 1891.

CAPE OF GOOD HOPE CENSUS.

TRANSMITTED BY CONSUL HOLLIS, OF CAPE TOWN.

Table showing return of population for Cape of Good Hope in 1891.

Census district.	Kaffir and Bechuana.			Mixed and other.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, as constituted and bounded in 1875.						
Aberdeen	908	510	398	1,975	997	978
Albany	9,339	4,583	4,756	1,795	854	941
Albert	6,065	3,841	2,224	1,262	685	576
Alexandria	5,454	2,686	2,768	1,063	558	505
Aliwal North	3,508	2,073	1,435	690	372	318
Barkly East	3,391	2,130	1,261	271	137	134
Bathurst	5,328	2,585	2,743	105	53	52
Beaufort West	524	354	170	3,384	1,751	1,633
Bedford	6,296	3,114	3,182	1,197	589	608
Bredasdorp	3	3	.....	3,326	1,582	1,744
Caledon	23	15	8	6,094	2,932	3,162
Calvinia	273	163	110	5,861	2,952	2,909
Cape	1,107	912	195	35,913	17,228	18,685
Carnarvon	1,029	532	497	3,343	1,690	1,653
Cathcart	3,863	2,005	1,858	220	117	103
Ceres	37	31	6	3,408	1,705	1,703
Clanwilliam	124	71	53	3,792	1,852	1,940
Colesberg	1,846	1,120	726	1,854	966	888
Cradock	4,674	2,598	2,076	2,320	1,120	1,200
East London	11,539	5,850	5,689	296	154	142
Fort Beaufort	6,982	3,411	3,571	709	363	346
Fraserburg	150	107	43	2,734	1,360	1,374
George	218	117	101	4,468	2,152	2,316
Graaff-Reinet	3,580	1,890	1,690	4,758	2,357	2,401
Hanover	544	335	209	1,223	639	584
Herschel	11,392	5,546	5,846	954	456	498
Hope Town	726	421	305	2,020	1,094	926
Humansdorp	1,098	572	526	3,618	1,821	1,797
Jansenville	2,251	1,219	1,032	1,625	826	799
King William's Town	56,106	25,752	30,354	620	296	324
Knysna	211	130	81	2,327	1,179	1,148
Komgha	4,390	2,085	2,305	8	5	3
Ladismith	108	67	41	2,810	1,366	1,444
Malmesbury	130	113	17	12,688	6,633	6,055
Middelburg	2,834	1,836	998	1,796	912	884
Mossel Bay	63	41	22	3,489	1,678	1,811
Murraysburg	504	296	208	1,953	1,013	940
Namaqualand	624	353	271	8,822	4,506	4,316
Oudtshoorn	514	305	209	9,694	4,766	4,928
Paarl	191	154	37	12,556	6,213	6,343
Peddie	3,898	1,892	2,006	72	32	40
Philipstown	600	378	222	1,961	1,013	948
Piquetberg	56	48	8	4,365	2,153	2,212
Port Elizabeth	3,455	2,130	1,325	5,273	2,532	2,741
Prieska	824	427	397	863	453	410
Prince Albert	159	111	48	2,009	1,060	949
Queenstown	29,225	14,458	14,767	1,504	691	813
Richmond	926	555	371	2,286	1,145	1,141
Riversdale	28	23	5	5,090	2,510	2,580
Robertson	100	86	14	4,010	1,964	2,046
Somerset East	6,894	3,663	3,231	3,409	1,666	1,743
Stellenbosch	194	137	57	7,969	3,958	4,011
Steynsburg	2,617	2,029	588	961	527	434
Stockenstrom	3,234	1,642	1,592	1,255	598	657

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	Kaffir and Bechuana.			Mixed and other.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, etc.—Continued.						
Stutterheim	4,863	2,518	2,345	254	129	125
Sutherland	50	43	7	1,106	559	547
Swellendam	34	19	15	5,280	2,545	2,735
Tarka	3,008	1,675	1,333	503	254	249
Tulbagh	42	36	6	3,558	1,760	1,798
Uitenhage	6,903	3,534	3,369	3,159	1,596	1,563
Uniondale	415	252	163	3,564	1,747	1,817
Victoria East	3,455	1,733	1,722	233	124	109
Victoria West	540	348	192	2,113	1,080	1,033
Willowmore	1,196	643	553	1,510	764	746
Wodehouse	21,479	10,558	10,921	537	268	269
Worcester	217	185	32	6,900	3,463	3,437
Total	252,359	129,049	123,310	226,784	112,520	114,264
Late province of Griqualand West, annexed in 1880.						
Barkly West	10,149	5,261	4,888	2,285	1,112	1,173
Hay	1,757	943	814	1,980	1,020	960
Herbert	3,852	2,008	1,844	2,226	1,170	1,056
Kimberley	15,520	12,625	2,895	8,662	4,588	4,074
Total	31,278	20,837	10,441	15,153	7,890	7,263
Native territories, annexed since 1875.						
East Griqualand:						
Maclear	1,641	862	779	366	186	180
Matatiele	11,053	6,081	4,972	313	147	166
Mount Ayliff	9,286	4,533	4,753	103	41	62
Mount Currie	3,624	1,965	1,659	2,260	1,037	1,223
Mount Fletcher	9,505	4,555	4,950	91	45	46
Mount Frere	15,929	7,599	8,330	230	107	123
Qumbu	13,618	6,559	7,059	152	81	71
Tsolo	13,275	6,501	6,774	88	47	41
Umzimkulu	24,953	11,733	13,220	724	354	370
Total	102,884	50,388	52,496	4,327	2,045	2,282
Tembuland:						
Elliotdale	21,831	10,804	11,027	17	7	10
Engcobo	46,317	21,830	24,487	197	96	101
Mqanduli	27,743	13,591	14,152	55	30	25
St. Mark's	19,562	9,486	10,076	17	7	10
Umtata	25,510	12,325	13,185	204	93	111
Xalanga	9,615	4,779	4,836	685	348	337
Port St. John's	135	87	48	61	21	40
Total	150,713	72,902	77,811	1,236	602	634
Transkei:						
Butterworth	2,334	1,066	1,268	47	18	29
Idutywa	15,833	7,442	8,391	19	10	9
Kentani	26,093	12,111	13,982	25	18	7
Nqamakwe	2,980	1,392	1,588	34	15	19
Tsomo	1,075	482	593	60	34	26
Willowvale	22,832	10,926	11,906	79	38	41
Total	71,147	33,419	37,728	264	133	131
Walfish Bay	75	40	35	42	19	23
Total for native territories	324,819	156,749	168,070	5,869	2,799	3,070
Grand total	608,456	306,635	301,821	247,806	123,209	124,597

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	European or whites.			Malay.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, as constituted and bounded in 1875.						
Aberdeen	3,106	1,607	1,499	3	2	1
Albany	9,391	4,599	4,792	26	12	14
Albert	8,293	4,181	4,012	15	9	6
Alexandria	2,417	1,214	1,203	4	3	1
Aliwal North	4,661	2,407	2,254	19	10	9
Barkly East	4,092	2,142	1,950	1	1	.....
Bathurst	1,833	941	892	.....	.....	.....
Beaufort West	3,875	2,035	1,840	14	8	6
Bedford	2,301	1,198	1,103	4	2	2
Bredasdorp	3,271	1,663	1,608	.....	.....	.....
Caledon	5,821	2,882	2,939	1	1	.....
Calvinia	5,050	2,673	2,377	1	1	.....
Cape	48,544	26,008	22,536	11,105	5,246	5,859
Carnarvon	3,733	1,985	1,748	.....	.....	.....
Cathcart	2,119	1,125	994	.....	.....	.....
Ceres	2,488	1,212	1,276	.....	.....	.....
Clanwilliam	4,473	2,244	2,229	2	2	.....
Colesberg	3,464	1,825	1,639	6	4	2
Cradock	6,517	3,362	3,155	20	12	8
East London	7,297	3,791	3,506	5	5	.....
Fort Beaufort	3,135	1,581	1,554	.....	.....	.....
Fraserburg	3,528	1,829	1,699	.....	.....	.....
George	4,957	2,472	2,485	2	1	1
Graaff-Reinet	6,202	3,121	3,081	49	21	28
Hanover	1,854	966	888	1	1	.....
Herschel	193	115	78	.....	.....	.....
Hope Town	3,038	1,593	1,445	1	1	.....
Humansdorp	4,130	2,160	1,970	.....	.....	.....
Jansenville	4,170	2,166	2,004	.....	.....	.....
King William's Town	8,605	4,300	4,305	12	8	4
Knysna	3,710	1,943	1,767	9	6	3
Komgha	1,345	656	689	.....	.....	.....
Ladismith	3,652	1,832	1,820	3	1	2
Malmesbury	10,120	5,173	4,947	63	36	27
Middelburg	4,042	2,190	1,852	13	9	4
Mossel Bay	3,445	1,745	1,700	7	2	5
Murraysburg	1,498	755	743	4	2	2
Namaqualand	3,718	2,046	1,672	1	1	.....
Oudtshoorn	11,576	5,806	5,770	22	11	11
Paarl	8,226	3,927	4,299	248	122	126
Peddie	1,458	735	723	.....	.....	.....
Philipstown	3,214	1,757	1,457	6	5	1
Piquetberg	6,515	3,340	3,175	1	1	.....
Port Elizabeth	13,939	7,425	6,514	900	454	446
Prieska	2,019	1,080	939	5	5	.....
Prince Albert	3,716	1,936	1,780	1	.....	1
Queenstown	6,458	3,333	3,125	11	7	4
Richmond	2,868	1,442	1,426	7	7	.....
Riversdale	6,203	3,091	3,112	.....	.....	.....
Robertson	6,019	2,977	3,042	24	11	13
Somerset East	6,740	3,543	3,197	6	5	1
Stellenbosch	4,420	2,110	2,310	135	73	62
Steynsburg	2,676	1,467	1,209	.....	.....	.....
Stockenstrom	1,660	855	805	.....	.....	.....
Stutterheim	1,967	1,010	957	2	2	.....
Sutherland	2,291	1,148	1,143	3	2	1

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	European or white.			Malay.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, etc.—Continued.						
Swellendam	5,585	2,808	2,777	3	2	1
Tarka	3,149	1,657	1,492	1	.....	1
Tulbagh	1,865	921	944	21	11	10
Uitenhage	7,185	3,756	3,429	194	92	102
Uniondale	3,927	1,974	1,953	2	2	.....
Victoria East	1,242	636	606	.....	.....	.....
Victoria West	3,406	1,827	1,579	27	25	2
Willowmore	4,342	2,296	2,046	25	19	6
Wodehouse	5,399	2,843	2,556	1	1	.....
Worcester	5,085	2,595	2,490	61	30	31
Total	336,938	174,032	162,906	13,097	6,294	6,803
Late province of Griqualand West, annexed in 1880.						
Barkly West	3,404	1,895	1,509	5	3	2
Hay	3,526	1,835	1,691	6	4	2
Herbert	2,434	1,304	1,130	.....	.....	.....
Kimberley	20,306	11,230	9,076	792	408	384
Total	29,670	16,264	13,406	803	415	388
Native territories, annexed since 1875.						
East Griqualand:						
Maclear	1,092	548	544	1	.....	1
Matatiele	646	361	285	1	1	.....
Mount Ayliff	210	180	30	.....	.....	.....
Mount Currie	1,220	698	522	1	.....	1
Mount Fletcher	86	50	36	.....	.....	.....
Mount Frere	296	188	108	.....	.....	.....
Qumbu	128	76	52	1	.....	1
Tsolo	65	42	23	.....	.....	.....
Umzimkulu	407	241	166	.....	.....	.....
Total	4,150	2,384	1,766	4	1	3
Tembuland:						
Elliotdale	35	25	10	.....	.....	.....
Engcobo	330	178	152	1	1	.....
Mqandull	70	51	19	.....	.....	.....
St. Mark's	267	146	121	.....	.....	.....
Umtata	1,010	504	506	1	1	.....
Xalanga	3,364	1,700	1,664	.....	.....	.....
Port St. John's	103	66	37	.....	.....	.....
Total	5,179	2,670	2,509	2	2	.....
Transkei:						
Butterworth	221	124	97	.....	.....	.....
Idutywa	219	148	71	.....	.....	.....
Kentani	192	105	87	.....	.....	.....
Nqamakwe	173	97	76	.....	.....	.....
Tsomo	131	70	61	.....	.....	.....
Willowvale	83	48	35	.....	.....	.....
Total	1,019	592	427	.....	.....	.....
Walfish Bay	31	14	17	1	1	.....
Total for native territories	10,379	5,660	4,719	7	4	3
Grand total	376,987	195,956	181,031	13,907	6,713	7,194

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	Hottentot.			Fingo.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, as constituted and bounded in 1875.						
Aberdeen	396	214	182	147	83	64
Albany	1,189	596	598	1,637	773	864
Albert	671	367	304	444	282	162
Alexandria	558	278	280	509	252	257
Aliwal North	215	112	103	870	491	379
Barkly East	117	60	57	335	234	101
Bathurst	213	112	101	1,718	845	873
Beaufort West	1,392	699	693	90	35	15
Bedford	801	386	415	1,083	534	549
Bredasdorp	7	3	4	.....	.....	.....
Caledon	252	140	112	1	1	.....
Calvinia	1,049	568	481	21	15	6
Cape	514	361	153	100	77	23
Carnarvon	1,010	498	512	17	16	1
Cathcart	239	125	114	440	233	207
Ceres	35	20	15	5	4	1
Clanwilliam	3,175	1,622	1,553	2	2	.....
Colesberg	938	484	454	180	122	58
Cradock	1,034	545	489	484	263	221
East London	130	77	53	2,371	1,198	1,173
Fort Beaufort	744	355	389	3,105	1,484	1,621
Fraserburg	478	246	232	17	7	10
George	345	170	175	96	51	45
Graaff-Reinet	893	460	433	896	431	465
Hanover	614	320	294	65	36	29
Herschel	53	27	26	12,467	5,793	6,674
Hope Town	627	325	302	88	64	24
Humansdorp	885	449	436	2,115	1,079	1,036
Jansenville	616	319	297	708	363	345
King William's Town	487	234	253	21,153	9,869	11,284
Knysna	526	295	231	148	92	56
Komgha	21	11	10	1,177	597	580
Ladismith	124	65	59	7	6	1
Malmesbury	308	186	122	19	15	4
Middelburg	673	378	295	331	223	108
Mossel Bay	278	149	129	4	2	2
Murraysburg	295	155	140	199	112	87
Namaqualand	3,776	1,951	1,825	4	4	.....
Oudtshoorn	1,966	1,007	959	98	52	46
Paarl	138	85	53	4	3	1
Peddie	75	42	33	11,022	5,218	5,804
Philipstown	924	512	412	141	106	35
Piquetberg	649	345	304	1	1	.....
Port Elizabeth	851	423	428	990	616	374
Prieska	584	320	264	7	6	1
Prince Albert	1,112	576	536	49	30	19
Queenstown	528	259	269	6,169	2,897	3,272
Richmond	1,102	572	530	57	42	15
Riversdale	42	27	15	3	3	.....
Robertson	1,289	630	559	6	6	.....
Somerset East	942	475	467	1,016	517	499
Stellenbosch	54	36	18	8	5	3
Steynsburg	57	28	29	741	716	25
Stockenstrom	1,296	586	610	431	204	227
Stutterheim	171	86	85	1,394	664	730
Sutherland	675	363	294	5	5	.....

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	Hottentot.			Fingo.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Colony proper, etc.—Continued.						
Swellendam	351	178	173	3	2	1
Tarka	372	178	194	410	222	188
Tulbagh	166	92	74	2	2	.....
Uitenhage	1,621	866	755	1,885	945	940
Uniondale	270	141	129	237	107	130
Victoria East	183	83	100	3,762	1,690	2,072
Victoria West	1,036	520	516	98	53	45
Willowmore	1,627	871	756	336	175	161
Wodehouse	143	76	67	1,383	758	625
Worcester	346	189	157	6	6	.....
Total	44,030	22,928	21,102	83,277	40,739	42,538
Late province of Griqualand West, annexed in 1880.						
Barkly West	1,057	550	507	587	324	263
Hay	1,228	649	579	11	10	1
Herbert	439	242	197	123	63	60
Kimberley	1,962	1,111	851	1,064	841	223
Total	4,686	2,552	2,134	1,785	1,238	547
Native territories, annexed since 1875.						
East Griqualand:						
Maclear	39	17	22	762	381	381
Matatiele	73	44	29	6,325	2,234	4,091
Mount Ayliff	2	1	1	2,424	1,160	1,264
Mount Currie	43	23	20	225	118	107
Mount Fletcher	3	.....	3	4,177	1,891	2,286
Mount Frere	41	20	21	6,593	3,031	3,562
Qumbu	20	9	11	9,449	4,417	5,032
Tsolo	24	14	10	10,656	5,072	5,584
Umzimkulu	41	23	18	356	152	204
Total	286	151	135	40,967	18,456	22,511
Tembuland:						
Elliotdale	1	.....	1	99	49	50
Engcobo	214	96	118	8,434	4,018	4,416
Mqanduli	.....	.....	.....	1,027	506	521
St. Mark's	90	41	49	2,200	1,037	1,163
Umtata	112	46	66	8,162	3,875	4,287
Xalanga	165	90	75	2,779	1,334	1,445
Port St. John's	.....	.....	.....	2	2	.....
Total	582	273	309	22,703	10,821	11,882
Transkei:						
Butterworth	13	8	5	12,697	5,823	6,874
Idutywa	116	67	49	9,520	4,360	5,160
Kentani	27	8	19	2,689	1,233	1,456
Nqamakwe	13	5	8	27,242	12,652	14,590
Tsomo	16	9	7	15,381	7,024	8,357
Willowvale	.....	.....	.....	13,419	6,220	7,199
Total	185	97	88	80,948	37,312	43,636
Walfish Bay	619	247	372	.....	.....	.....
Total for native territories	1,672	768	904	144,618	66,589	78,029
Grand total	50,388	26,248	24,140	229,680	108,566	121,114

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	Total of all races.		
	Persons.	Males.	Females.
Colony proper, as constituted and bounded in 1875.			
Aberdeen	6,535	3,413	3,122
Albany	23,377	11,417	11,960
Albert	16,649	9,365	7,284
Alexandria	10,005	4,991	5,014
Aliwal North	9,963	5,465	4,498
Barkly East	8,207	4,704	3,503
Bathurst	9,197	4,536	4,661
Beaufort West	9,239	4,882	4,357
Bedford	11,682	5,823	5,859
Bredasdorp	6,607	3,251	3,356
Caledon	12,192	5,971	6,221
Calvinia	12,255	6,372	5,883
Cape	97,283	49,832	47,451
Carnarvon	9,132	4,721	4,411
Cathcart	6,881	3,605	3,276
Ceres	5,973	2,972	3,001
Clanwilliam	11,568	5,793	5,775
Colesberg	8,288	4,521	3,767
Cradock	15,049	7,900	7,149
East London	21,538	11,075	10,463
Fort Beaufort	14,675	7,194	7,481
Fraserburg	6,907	3,549	3,358
George	10,086	4,963	5,123
Graaff-Reinet	16,378	8,280	8,098
Hanover	4,302	2,297	2,004
Herschel	25,059	11,937	13,122
Hope Town	6,500	3,498	3,002
Humansdorp	11,846	6,081	5,765
Jansenville	9,370	4,893	4,477
King William's Town	86,983	40,459	46,524
Knysna	6,931	3,645	3,286
Komgha	6,941	3,354	3,587
Ladismith	6,704	3,337	3,367
Malmesbury	23,328	12,156	11,172
Middelburg	9,689	5,548	4,141
Mossel Bay	7,286	3,617	3,669
Murraysburg	4,453	2,333	2,120
Namaqualand	16,945	8,861	8,084
Oudtshoorn	23,870	11,947	11,923
Paarl	21,363	10,504	10,859
Peddie	16,525	7,919	8,606
Philipstown	6,846	3,771	3,075
Piquetberg	11,587	5,888	5,699
Port Elizabeth	25,408	13,580	11,828
Prieska	4,302	2,291	2,011
Prince Albert	7,046	3,713	3,333
Queenstown	43,895	21,645	22,250
Richmond	7,246	3,763	3,483
Riversdale	11,366	5,654	5,712
Robertson	11,348	5,674	5,674
Somerset East	19,007	9,869	9,138
Stellenbosch	12,780	6,319	6,461
Steynsburg	7,052	4,767	2,285
Stockenstrom	7,776	3,885	3,891
Stutterheim	8,651	4,409	4,242
Sutherland	4,012	2,120	1,892
Swellendam	11,256	5,554	5,702
Tarka	7,443	3,986	3,457

Table showing return of population for Cape of Good Hope in 1891—Continued.

Census district.	Total of all races.		
	Persons.	Males.	Females.
Colony proper, as constituted and bounded in 1875—Continued.			
Tulbagh	5,654	2,822	2,832
Uitenhage	20,947	10,789	10,158
Uniondale	8,415	4,223	4,192
Victoria East	8,875	4,266	4,609
Victoria West	7,220	3,853	3,367
Willowmore	9,036	4,768	4,268
Wodehouse	28,942	14,504	14,438
Worcester	12,615	6,468	6,147
Total	956,485	485,562	470,923
Late province of Griqualand West, annexed in 1880.			
Barkly West	17,487	9,145	8,343
Hay	8,508	4,461	4,047
Herbert	9,074	4,787	4,287
Kimberley	48,306	30,803	17,503
Total	83,375	49,196	34,179
Native territories, annexed since 1875.			
East Griqualand:			
Maclear	3,901	1,994	1,907
Matatiele	18,411	8,868	9,543
Mount Ayliff	12,085	5,915	6,110
Mount Currie	7,373	3,841	3,532
Mount Fletcher	13,862	6,541	7,321
Mount Frere	23,089	10,945	12,144
Qumbu	23,368	11,142	12,226
Tsolo	24,108	11,676	12,432
Umzimkulu	26,481	12,503	13,978
Total	152,618	73,425	79,193
Tembuland:			
Elliotdale	21,983	10,885	11,098
Engcobo	55,493	26,219	29,274
Mqanduli	28,895	14,178	14,717
St. Mark's	22,136	10,717	11,419
Umtata	34,999	16,844	18,155
Xalanga	16,608	8,251	8,357
Port St. John's	301	176	125
Total	180,415	87,270	93,145
Transkei:			
Butterworth	15,312	7,039	8,273
Idutywa	25,707	12,027	13,680
Kentani	29,026	13,475	15,551
Nqamakwe	30,442	14,161	16,281
Tsomo	16,663	7,619	9,044
Willowvale	36,413	17,232	19,181
Total	153,563	71,553	82,010
Walfish Bay	768	321	447
Total for native territories	487,364	232,569	254,795
Grand total	1,527,224	767,327	759,897

HENRY DE SMIDT,
Acting Under Colonial Secretary.

THE BEET-SUGAR INDUSTRY OF FRANCE.

REPORT BY CONSUL KNOWLES, OF BORDEAUX.

There are at this time in France four hundred and nineteen beet-sugar factories, the majority of them, however, being situated in the northern departments. There are only three in this district.

The factories are in operation both day and night throughout the year. Two or three days only may be deducted for purposes of cleaning and repairs.

Statistics of production are available only up to the 31st of December, 1890. These show a total product of 1,092,661,155 pounds during the twelve months of 1890.

The quantity of sugar imported amounted to 340,473,991 pounds during the same year.

The amount received from internal tax on sugar is absolutely nothing. The Government is a loser. In order to guard against the manufacture of sugar from foreign or deleterious substances, the Chamber and Senate on August 5, 1890, passed a law in which a tax was levied on sugar coming out of a refinery in excess of the declared quantity of raw sugar registered as entering the factory. In other words, a manufacturer can not turn out a quantity of refined sugar exceeding the amount produced for the raw material that goes into his factory; should he, however, do so, he must pay a tax on the excess. Since the passage of that law not a single refinery throughout France has produced or arrived at an excess.

The amount received from import duty was $18,004,524.76.

There is no bounty.

There are stationed in each factory two or more officers for the purpose of taxing any excess of production, as heretofore explained. Their exact number is not readily available.

Sugar-refiners are not required to keep any kind of books under the law. Books setting forth statements as to the quantity of raw material entering the factory, together with a record of the quantity refined and going out of the factory during the year, are kept by the Government officers stationed at the refinery.

HORACE G. KNOWLES,
Consul.

UNITED STATES CONSULATE,
Bordeaux, December 27, 1891.

SCIENTIFIC FERTILIZATION OF TOBACCO LANDS.

REPORT BY CONSUL-GENERAL MASON, OF FRANKFORT.

In the record of all lands permanently devoted to the culture of tobacco there are three stages or periods, viz: The first period, during which the virgin soil, rich with its natural admixture of ingredients—potash, chlorine, phosphorus, etc.—produces a leaf more or less wild, rank, and wanting in the delicate aromatic flavor of high-class tobacco; the second, during which the ground, tempered by culture and with the excess of certain elements reduced to normal proportions by the drain of successive crops, produces without especial fertilizing a natural leaf of the best quality attainable in that locality; and the third period, wherein the lack of certain elements and the excess of others must be corrected and harmonized by skillful treatment in order to save the tobacco crop from degenerating, in both quantity and quality, below the point of profitable culture. The duration of the first and second of these periods is governed largely by the original strength of the soil and the skill with which its native qualities are conserved by judicious cultivation and rotation with other crops; but in the end the result is almost inevitably the same, and the success of continuous tobacco-growing comes finally to depend upon intelligent and persistent fertilizing.

Particularly is this now true of Bavaria, Baden, and Alsace-Lorraine, the three great tobacco-producing states of southern Germany, in all of which the lands adapted to tobacco-growing have long ago passed into the third or artificial stage.

The culture of the weed was introduced into Alsace more than two hundred and seventy years ago by one Robert Königsmann, an Alsatian who had lived in the British colonies, and who returned in the year 1620, bringing a quantity of tobacco seed, which he planted on his ancestral farm near Strasburg. The quality of his product was at first rather ordinary, but, as the yield was profuse and the tastes of consumers much less exacting then than now, the culture proved so profitable that it quickly spread over a large portion of Alsace-Lorraine and the adjoining German province of Baden. Eight years afterwards the new plant had become so widely cultivated that when excessive and persistent rains fell during May and June, 1628, jeopardizing the other growing crops, the deluge was attributed by the peasants to the presence of so much tobacco, which, as they thought, excited and drew the moisture of the clouds in the same manner as the matured weed excites watery secretions from the salivary glands; and they rose in revolt, burned the drying sheds, and uprooted the growing tobacco plants, a tribute to the weather god, for which they were afterwards compelled by a paternal government to pay.

Through many vicissitudes of State monopoly and various forms of control and taxation tobacco culture in the upper Rhine Valley has continued to flourish until the present time; and during its second period the leaf of

Alsace and Baden was so fine in texture and flavor as to easily hold its own in the markets of Amsterdam with the best colonial growths. There were, at the date of latest statistics, 14,195 tobacco culturists in Bavaria, 35,249 in Baden, and 14,410 in Alsace—63,854 in all—who raised 16,666 tons of cured leaf in 1889, which was worth, exclusive of taxes, $1,912,000. But the quality of south German tobacco has long been steadily deteriorating, or was so until a few years ago, when some of the more intelligent cultivators adopted the recourse of obtaining seed from other countries to stimulate and restore their degenerate stock. Connecticut, Sumatra, Virginia, Maryland, and Wisconsin tobacco seed has within recent years been planted on the worn fields of southern Germany with uniformly favorable results.

But it requires something more than even good seed to permanently sustain the tobacco-growing industry of this section. The time has come when the problem of accurate, scientific fertilizing must be studied on a broad, intelligent scale and the results of such studies disseminated so thoroughly among cultivators that even those of the most ordinary initiative shall be able to understand and profit by them.

Hitherto many peasant farmers have injured the quality of their tobacco crops by the excessive use of night soil and coarse stable manure applied in the spring of the year during the process of preparing the ground for planting. Tobacco grown by such methods is often profuse and luxuriant in quantity and growth, but it is rank in flavor and lacks inflammability and the susceptibility of burning with the clear, white ash that is so important in tobacco destined for smoking. This fatal lack of "Brennbarkeit," as the Germans express it, is due to an excess of nitrogen, or rather a lack of chlorine and potash, in the soil, which latter elements ordinary farm manures do not supply; and hence the necessity out of which has grown the important movement which it is the purpose of this report to record.

On the 14th of the present month there assembled at Carlsruhe, in Baden, a convention of delegates representing all the tobacco-growing states of the German Empire—Prussia, Hesse, Bavaria, Würtemberg, Baden, and Alsace-Lorraine—besides special representatives of the tobacco manufacture in Strasburg and Mannheim and an important syndicate of manufacturers of chemical fertilizers at Stassfurt-Leopoldshalle, near Berlin. Two of the delegates represented incidentally the agricultural ministry of Austria-Hungary, and, in view of the importance of tobacco culture in the United States, the consular representative of that country at Frankfort was present as an invited guest.

The delegates were for the most part experts of high rank in agricultural chemistry; several of them, notably Prof. Nessler, of Carlsruhe, were specialists in the chemistry of tobacco. The purpose of the meeting was to discuss and formulate a programme for a series of elaborate and thorough experiments in the fertilization of tobacco lands—the planting, cultivation, and curing of the crop—especially the mysterious relation of various manures to the effects of wet or dry seasons, and to collect the results of the

whole series of experiments into a treatise so arranged and simplified as to serve as a trustworthy text-book for cultivators. After the usual ceremonies of organization, the convention set resolutely to work, and in the course of a session which lasted five hours arranged and adopted the following plan of action:

(1) A series of experiments in fertilizing tobacco lands shall be undertaken by each of the states here represented. These experiments shall begin with the planting season of 1892 and continue four years.

(2) The general plan and scope of the experiments are to be determined and specified in advance of each planting season by a special commission to be hereinafter appointed for that purpose.

(3) Each government here represented shall pay the expenses of its own experiments in all that regards the fertilization of the soil and culture of the plant.

(4) A central bureau, or directory, shall be established at Strasburg, to be under the permanent control of the commission above mentioned, to which shall be sent from all members samples of each year's crop, together with samples of soils and fertilizers used and such reports on the methods of cultivation as may be required by the commission in studying the measure and value of the result. The commission shall, on the other hand, communicate the results of such studies and analyses to all members of the association and will answer promptly all inquiries from members upon any point or phase of the subject that may come within its province.

(5) There shall be held once each year during the period of these experiments a general meeting of delegates from all the states interested, to discuss the results obtained by the experiences of the past season, and to formulate therefrom a schedule of experiments for the succeeding year. By this method the work of the association will be made progressive, and the teachings of its experiences will be made at once available to all its members.

Such, in brief, is the scope and purpose of the organization. The experiments will be made principally at the agricultural schools and state farms that are under direct control of the several provincial ministers of agriculture. The expenses of the central bureau at Strasburg are to be paid partly from a yearly endowment offered by the Verkaufs Syndicate of the potash-manufacturing firms at Stassfurt-Leopoldshalle and partly by an annual subsidy from the state department of agriculture. The cost of sending samples, etc., to and from the central commission will be paid by the members to whom such samples directly relate.

The programme for the first season's experiments will soon be issued. It has been found that the best effects are produced when the fertilizing materials are applied to tobacco lands in the autumn, so as to allow ample time for thorough amalgamation before the season of planting. The warm, open weather that has prevailed thus far this winter has favored this process, and, notwithstanding the lateness of the date of organization, it is expected that the first series of trials will be made under favorable conditions.

It is therefore to be confidently hoped that the results of the coming four years of systematic, progressive experiment, beginning at the most advanced point of present knowledge and continued, step by step, under the varying conditions of soil and climate that prevail in this country will, when collected and digested, form a text-book of the highest practical value to tobacco culturists.

In all essential respects the conditions of soil and climate in Germany are similar to those which prevail in the Middle States. Here, where tobacco has been grown more or less continuously for nearly three centuries, the soil is naturally more nearly drained of certain original elements than is the case in most parts of the United States, but, in a general sense, the fertilizers and methods of cultivation which are most successful here will be closely applicable to the tobacco fields of our own country. The success of American tobacco seed planted in Germany has already been remarked. Among the samples of the past season's growth that were exhibited at the recent convention those grown in Alsace from Connecticut and Maryland seed were found to be especially excellent.

It may therefore be reasonably expected that the teachings of the coming experiments will have an important interest for tobacco-growers in the United States, and the question was more than once asked during the recent convention whether the Agricultural Department of our Government, which has done and is doing such advanced and useful work in so many other fields, would not, with proper invitation, accept a membership in the present association and share directly in its labors and results.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, December, 1891.

SCIENTIFIC FERTILIZATION OF TOBACCO LANDS.

SUPPLEMENTAL REPORT BY CONSUL-GENERAL MASON, OF FRANKFORT.

In December last there was submitted from this office a report in which was given some account of the proceedings of a convention of special delegates who had met at Carlsruhe on the 14th of that month for the purpose of organizing an elaborate series of experiments in the fertilization of lands devoted to the culture of tobacco. It was stated in that report that the proposed experiments were to be made separately by each of the states represented at the meeting; that these trials were to be made simultaneously and in accordance with a carefully prescribed plan; that they were to be continued, with a yearly change of programme, through four successive seasons; and that the schedule for the experiments of the present year would be announced as soon as possible by a central committee which the convention at Carlsruhe had appointed for that purpose. This committee met recently at Mannheim, and its proceedings have been published in an official circular, the substance of which is translated and condensed into the following summary, which forms the complement of the report previously submitted.

It will be remembered that the delegates at the meeting in Carlsruhe represented the imperial ministry of agriculture at Berlin and the agricultural departments of the several tobacco-growing German states, together

with Austria-Hungary and Switzerland, and that a very general desire was expressed that the tobacco culturists of the United States, who are subject to conditions of soil and climate similar to those of Germany, should join in the experiments and share in the benefits of whatever practical results might be obtained.

At the recent meeting of the committee at Mannheim there was a prolonged informal discussion of the whole subject, in which the problem in hand was defined as an effort to discover the best methods of attaining two results, viz, to supplement by means of chemical fertilizers the present inadequate supply of stable manure, and, secondly, to correct by the same means the lack of certain essential elements in the soil which stable manure, even when abundantly applied, is incompetent to supply. Stable manure alone yields an excess of nitrogen and leaves a deficiency in potash and chlorine, the result of which is that the tobacco leaves are thick, coarse in texture, and deficient in burning qualities. These defects have been aggravated in domestic German tobaccos during recent years by the alternation of tobacco culture with that of the sugar beet, which also makes a heavy drain upon the potash in the soil on which it is grown. It has been found that tobacco grown upon land which has been devoted for a number of years to tobacco and beet culture contains an average of only 3 per cent of potash, whereas good smoking tobacco should have from 4 to 5 per cent of potash and not more than 0.4 per cent of chlorine. The problem is, therefore, to augment the supply of potash and to furnish just the requisite proportion of chlorine, but no more.

Experiments have been made in Germany during the past three years, but they have all resulted unfavorably, and their chief value has been to dispel certain illusions and clear the ground for the more deliberate and intelligent trials that are now to be undertaken. In 1889 experiments were made with a combination of potash and magnesia (calcined manure salts), largely impregnated with chlorine, but the result was abortive, for, though the leaves were large and vigorous, they burned badly by reason of their excess of chlorine. In 1890 the experiments demonstrated that sulphate of ammonia was not adapted to the purpose, and those of 1891 have shown that the best forms of the requisite elements are to be found in carbonate of potash, combined with magnesia, and sulphate of potash. It is with these two materials, therefore, that the trials of 1892 will begin. Carbonate of potash-magnesia and sulphate of potash are both made cheaply and abundantly in Germany, and samples of each, in the form prescribed for the experiments of the coming season, are transmitted with this report.* Both are to be mixed before using with from ten to twenty times their weight of peat or vegetable mold; and it should be remembered that in the use of chemical fertilizers for tobacco the best results are usually obtained when they are mixed in the soil during the preceding autumn, so that the elements are more thoroughly dissolved and assimilated during the long repose of winter.

*Samples sent to the Department of Agriculture.

The trials of the coming season will therefore be made under the disadvantage of spring fertilizing, and are to be conducted as follows: The field to be used by each member shall contain 500 square meters of ground, to be divided into five sections of 100 square meters each.

The fertilizers are to be applied to the freshly plowed land in the form of two mixtures, to be constituted as follows: Mixture No. 1 is made of 90 per cent of peat and 10 per cent of sulphate of potash (containing 52 per cent of potash); mixture No. 2 is made of 75 per cent of peat and 25 per cent of carbonate of potash-magnesia (containing 18.5 per cent of potash). These are to be applied to the soil in the following manner: Section 1 shall receive no fertilizer containing potash; section 2 shall receive 22.5 pounds of mixture No. 1; section 3, 50 pounds of mixture No. 1; section 4, 28.6 pounds of mixture No. 2; section 5, 42.1 pounds of mixture No. 1 and 12.2 pounds of mixture No. 2. In order to more readily distribute the mixtures evenly over the whole surface, they may be mingled with a convenient quantity of dry, pulverized earth.

In sections 3 and 4 the sulphate of potash and carbonate of potash-magnesia shall be mixed before application with Burgweiler peat of ten times their weight. The foregoing provides only that the tobacco plants shall be adequately supplied with potash. It remains to provide the necessary chlorine and phosphoric acid. These elements will be the subject of future experiments, but for the trials of 1892 the official program only prescribes:

(1) That the use of stable manure shall be according to the local usage, modified by the supposed needs of the soil used for the experiments.

(2) In case of unfavorable weather, or should the growth demand it, Chile saltpeter, in proportion not to exceed 110 pounds per acre, may be applied before topping.

(3) The trials shall be made upon light, medium soils, and never on heavy or infected land.

(4) The usual local varieties of tobacco seed shall be used, and for the present year's experiments no foreign-grown seed shall be used in the experiments by any member of the association, except the Mannheim Tobacco-growers' Club, which is charged with special trials with Sumatra and Connecticut seed.

(5) No instructions will be issued as to the cultivation of the plants, but it is enjoined that the planting shall be as early as is consistent with local conditions.

(6) The plants shall not be set too widely apart, but in strict accordance with local usage, as prescribed by government revenue regulations.

(7) The topping shall be done in accordance with the usual practice in the locality where the experiment is made.

In order to secure exact uniformity of material used in the various experiments in Germany, most of the members will employ a mixture of the prescribed chemicals with Burgweiler peat, made and mixed by the syndicate of potash manufacturers at Stassfurt. (There is, of course, an abundance of peat in almost any part of the United States, which would serve equally well for the purpose of the proposed experiments.) As to the fertilizers, it re-

quires simply that the sulphate of potash used shall contain, for the purpose of uniformity, 52 per cent of the protoxide of potassium (K_2O), and the carbonate of potash-magnesia shall contain 18.5 per cent of the same element.

Will it not be worth while for the tobacco-growers of the United States to join in these practical studies and share in their results? Their fields may not yet be so worn by long cultivation and so dependent upon artificial stimulants as those of Europe, but tobacco is everywhere an exhausting crop, and its drain upon the land will have to be met, in our country as well as elsewhere, with every stimulating nourishment that the most scientific cultivation can suggest.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, February 5, 1892.

THE SILVER MINES OF BOLIVIA.

REPORT BY MINISTER ANDERSON, OF LA PAZ.

In my recent report on the gold production and history of gold-mining in Bolivia attention was called to the difficulties attending the preparation of tabulated statistics showing the annual production of the precious metals in this country, owing to the absence of a properly organized bureau of statistics interested in carefully gathering and regularly publishing, under the authority of the Government, all obtainable data relating to this important subject.

In this fact and in the unfortunate system that obtains in this Republic of "farming out" the public revenues are to be found the chief causes for the present confusion in Government circles as to the actual annual production of silver in Bolivia.

With the exception of the export duties paid by the famous Huanchaca Company and a few others directly to the Government, the right to collect this duty of 80 cents (Bolivian money) per marc is sold to the highest bidder in October of each year for the calendar year beginning with the 1st of January next thereafter.

The successful bidder, having paid or secured to the Government the amount so agreed to be paid, is under no further obligation thereto in that behalf. Being thus exempt by law from accounting to the public for the amount of duties collected he naturally maintains the closest secrecy upon this point so as not to invite competition when he comes to renew his contract with the Government for the next year. During 1890 the duties on silver exported from five districts were sold and collected in this manner, while ten different mining companies paid directly to the Government. The amount of silver produced by these ten mines in 1890 can therefore be pretty accurately determined, while the amount produced from the mines falling within the districts named is not so easy of ascertainment. The estimates, therefore, of the product of these last-named mines and of the

amount of silver used in the arts and clandestinely exported, as embodied in this report, though based upon the most trustworthy data obtainable, including the reports of the minister of the treasury, are necessarily unsatisfactory, and out of abundant caution have been placed at fully 10 per cent less than the popularly accepted estimates.

With this explanation of the difficulties attending the effort to secure reliable data upon this subject, the amount of silver produced by the Bolivian mines for the calendar year 1890 and the first six months of 1891 was approximately as follows:

Table showing the production of silver in Bolivia during the calendar year 1890 and the first six months of 1891.

Name of mines and districts.	Where situated.	Production.	
		1890.	First six months, 1891.
		*Marcs.**	*Marcs.**
Huanchaca	Province of Porco	656,192.50	381,159.85
Colquechaca	Province of Chuquisaca	37,378.12	26,457.11
Aullagas	do	151,309.12	55,427.80
Real Socavon de Potosi	do	24,894.78	18,467.00
Compañia Minera de Oruro	Province of Oruro	75,316.92	58,307.04
Compañia Minera de Itos	do	54,535.42	7,982.86
Guadalupe	Province of Chuquisaca	32,235.88	21,863.75
Consuelo	do		5,451.10
Andacaba	Province of Linares	14,635.94	2,748.12
San Miguel	Province of Chuquisaca	250.56	
Flamenca	do	10,908.98	2,957.85
Districts:			
Machacamarca	Department of Oruro	6,900.00	155,650.00
Potosi	Department of Potosi	26,550.00	
North and South Chichas	do	2,550.00	
Chayanta	Department of Chuquisaca	43,875.00	
The North	Department of La Paz	52,625.00	
Total		1,190,158.22	736,472.48

*According to the consul-general's computation, 4.3478 Bolivian marcs equal 1 kilogram.

The report of the minister of the treasury for the first half of the calendar year 1890 places the production for that period at 595,079.11 marcs, while the production for the first six months of 1891, as here given, was 736,472.48 marcs, making a gain for the same period over last year (1890) of 141,393.37 marcs.

No allowance is made in the above table for silver used in the industrial arts and clandestinely exported, which is usually estimated here at one-fifth of the total annual production. It is perfectly safe, however, to add one-tenth to the production, as shown by the table, for this purpose, thereby increasing the total production for the calendar year 1890 to 1,309,174.04 marcs and for the first six months of 1891 to 810,119.72 marcs.

The following statement shows the amount and grade of ore produced and how disposed of for the calendar year 1890:

	Marcs.
Ores containing 50 marcs per cajon, or one-half of 1 per cent of silver produced..	49,586.02
Ores containing 100 marcs per cajon, or 1 per cent of silver produced.....	252,813.76
Ores containing 150 marcs per cajon, or 1½ per cent of silver produced.....	84,988.52
Ores containing 200 marcs per cajon, or 2 per cent of silver produced.....	74,998.24
Ores containing 250 marcs per cajon, or 2½ per cent of silver produced.....	7,054.6
Ores containing 300 marcs per cajon, or 3 per cent of silver produced.....	1,216.64
Ores containing 350 marcs per cajon, or 3½ per cent of silver produced.....	2,223.9
Ores containing 400 marcs and over per cajon, or 4 per cent of silver produced..	165,110.12
Total of above grades exported.....	637,901.8
Amount of plata piña produced in the country from low-grade ores.....	552,166.42
Total exported and worked in the country.....	1,190,158.22
Estimated amount used in the industrial arts and clandestinely exported, viz, one-tenth of the total product reported.....	119,015.82
Total production for the year.....	1,309,174.04

Estimating 1 kilogram at 4.3478 Bolivian marcs and the commercial value of silver at the average price for the calendar year 1890 as given in the annual report of the director of the United States mint, the commercial value of the silver produced in Bolivia for the calendar year 1890 was as follows:

Table showing the commercial value of the produce of Bolivian mines for 1890.

Description.	Quantity.		Value.*
	Marcs.	*Kilograms.*	
Total reported production.....	1,190,158.22	273,738.03	$10,018,810
Total estimated amount used in the industrial arts and clandestinely exported.....	119,015.82	27,373.8	1,001,881
Total.....	1,309,174.04	301,111.83	11,020,691

*United States currency.

This shows an apparent increase of production over 1888 and 1889 of $1,442,691; but, as the reported production for those years, viz, $9,578,000, does not embrace silver used in the industrial arts of the country and clandestinely exported, which was fully the same ratio of the total production for those years as has been included in the estimates for 1890, viz, one-tenth, the real increase must be determined by adding one-tenth to the returns of the minister of the treasury for those years and subtracting this sum from the total product of 1890, which shows an actual gain in production for 1890 over the two preceding years of $485,691.

It is interesting to note in passing that, as the average commercial value of silver (.985 fine) in the country for 1890 was but 10.40 bolivianos per marc, or 45.21 bolivianos per kilogram, and the value of a Bolivian dollar at the average exchange for the year (30*d.*) was but 63 cents in United States currency, the difference between the commercial value of the total silver product of Bolivia for 1890 in this country and in New York was over $2,600,000, a handsome margin even after paying the export duty of 80 cents per marc and the expenses of shipment to the United States.

Table showing the silver production of Bolivia from 1886 to June 30, 1891.

Years.	Quantity.	Value.†
	Kilograms.	
1886	228,895.	$9,500,000
1887	137,468	5,713,170
1888	230,460	9,578,000
1889	230,460	9,578,000
1890	*301,111	11,020,691
1891 (first 6 months)	*186,333	6,819,787

*Including estimated amount employed in the industrial arts and clandestinely exported.
† United States currency.

Table showing the coinage at the Government mint in Potosi from 1885 to June 30, 1891.

Years.	Coinage.	Equivalent in United States currency.
	Bolivianos.	
1885	1,289,536.60	$791,126.75
1886	1,091,537.20	669,654.72
1887	1,748,112.60	1,072,461.70
1888	1,452,276.39	890,967.10
1889	797,793.00	489,443.55
1890	887,387.20	544,409.63
1891 (first 6 months)	808,920.00	496,267.00

THE HUANCHACA MINE.

It will be observed by the first table that the greatest silver-producing mine of Bolivia is the Huanchaca, yielding 656,192.50 marcs in 1890, representing at the commercial value of silver in the country during the calendar year (10.40 bolivianos per marc .985 fine) 6,824,402 bolivianos, equal to $4,247,485 in United States currency. Allowing 40 per cent of this amount for working expenses, which is a little more than the estimates, it is safe to conclude that the Huanchaca netted to the stockholders last year 4,094,642 bolivianos, or $2,544,891 in United States currency. During the last thirteen years of uninterrupted prosperity the Huanchaca Company has realized a clear profit of 26,000,000 bolivianos, while the increasing richness of the ores mined give promise of largely increased profits and justifies the prediction that Huanchaca shares, now worth 3,600 bolivianos each, will ultimately reach 5,000 bolivianos per share. The report of the annual meeting of the directors held October 1, 1890, estimates the ores in sight and held as a reserve at 5,500,000 marcs. This company was organized in 1873 by Dr. Aniceto Arce, now President of Bolivia, and one of its largest shareholders, and has a capital stock of 6,000,000 bolivianos divided into shares of 1,000 bolivianos each. The company's stock is largely owned by citizens of Chile, and hence the directory is located in Valparaiso. It controls all the mines of the Pulacayo district, embracing 480 *pertenencias*, or claims, each 100 meters square. In 1887 the stockholders entered into an arrangement

with the Nitrate Railway Company, of Antofagasta, and built a railroad from Antofagasta, on the Chilean coast, to Pampa Alta, on the western frontier of Bolivia, a distance of 151 kilometers, and from thence, unaided, completed the road to Huanchaca, a distance in all of 640 kilometers, or 433 miles. This road, having recently passed into other hands, is now being extended from Uyuni to Oruro, a distance of 312 kilometers, and is now within 12 kilometers of completion. Another important enterprise successfully carried through by this company was the cutting of the Pulacayo tunnel, by means of which railway communication is extended from Uyuni directly to the great mining properties of the Huanchaca Company. Work was begun on this tunnel September 1, 1882, and its total length of 3,307 meters was finished September 25, 1887, at a cost of 544,582 bolivianos.

This company now employs about 5,000 people and gives promise of furnishing employment to a largely increased number. The reason that Huanchaca is the greatest silver-producing mine in Bolivia and one of the greatest in the world is not so much because of the richness of its metals as its apparently limitless supply of uniformly good ores and the business sagacity and enormous capital with which its vast operations are conducted, for there are much richer mines in Bolivia than the Huanchaca.

OTHER MINING DISTRICTS.

The property of the Aullagas Company is, perhaps, the richest in Bolivia, with the possible exception of the Colquechaca. In 1890 this company paid a dividend of 36 per cent on a nominal capital of $2,500,000. Of the total production of the Aullagas for 1890, viz, 151,309.12 marcs, none of its ores yielded less than 1,288 ounces per ton, while, according to the company's annual report for 1889, the total of 4,265.50 quintals exported during the calendar year 1888 averaged 2,830 ounces per ton.

The mines of the Oruro district are among the richest and most prosperous in Bolivia, especially the famous San José mine, better known as the "Penny mine." This mine is producing at the rate of $3,000 per day, and, if I may be allowed the digression, I may add that it is owned by an old Indian woman known as the "Silver Queen" of Bolivia, who, from working on the ore dumps at 35 cents per day for her daily bread, has come to be the owner of many millions of money and real estate in this country and Europe, and who has just added to the romance of her eventful life a young English husband of but twenty-two years, to whom she was recently married in London and with whom she is now living on her half-million estate in Scotland preparatory to their return to this city, where she has her permanent home.

The Itos and Socavon, owned by the Compañia Minera de Oruro, or Chilean company, under the management of Señor Carlos G. Avalos, consul-general of Chile in Bolivia; the Atocha, under the management of Señor Carlos Petot, vice-consul-general of France in Bolivia; and the Santo Cristo and Tetilla, owned principally in this city, are among the best-paying mines of the country, and are now working about 3,000 employés.

METHOD OF TREATING SILVER ORES.

The method of treating silver ores is practically the same in all the mining centers of the country. The ore is first passed through a crusher and then separated by hand, Indian women being employed for this purpose, for which they are paid from 35 to 55 cents in Bolivian money per day, equal to from 20 to 35 cents in United States currency. Ores having 50 and more marcs per cajon, or, say, 165 ounces troy per ton and above, are placed in 100 pound sacks and shipped to Europe, while the lower-grade metal, down to 20 marcs per cajon, or yielding, say, 65 ounces of silver per ton, are treated at the mines, while all ores carrying less than 65 ounces are generally rejected as worthless. The first process here employed consists in milling the ore.

Milling the ore.—The mills used for this purpose are of three kinds, each made of stone, and are of the most primitive character. In order that the primitive methods of milling usually employed in the country may be the better understood by those not having seen them in operation either in South America or in Mexico, a brief description may be of interest.

First is the "quimbalete," which is simply a large bowlder, with a short pole lashed to the top with raw hide to serve as a lever in rocking it with a "pump-handle motion" back and forth through the segment of a circle of about 5 feet in diameter over a flat bed stone, upon which the metal is thrown so as to be caught under the rocking bowlder.

This "mill," which is generally used where water is scarce, is operated by a single Indian, or, if it be a "double-handed quimbalete," that is, if the pole is lashed midway across the top of the bowlder, then two Indians are required, who, sitting astride either end of the pole, convert the old game of seesaw into an important industrial exercise.

The second is the "trapiche," and is the primitive form of the present Chilean mill. It consists of a large stone wheel 6 feet in diameter and 5 feet wide, called "voladora," whose axle is connected with a perpendicular shaft on which rests horizontally a large wooden wheel similar to a pelton, which, being propelled by water, drives the "voladora" around on a flat, circular bed stone called "solera," upon which the metal to be thus milled is thrown from time to time.

In milling gold ores the water serves the double purpose of driving the mill and washing the metals. Rushing down a sluice box, called "chiflon," at an angle of 45° and striking the buckets, which consist simply of upright pieces of boards extending across the top of the wheel from its rim toward its center, it falls upon the ore traversed by the "voladora," carrying off the fine particles into a pebble-paved sluice box about 6 feet long, where the metal and quicksilver are finally deposited. The capacity of a new mill of this kind is about 2 tons per day of twenty-four hours, but, as it wears rapidly, its capacity is proportionally lessened, until at the end of twelve or eighteen months a new "voladora" is required.

The third is the "arrastra," and consists simply in substituting a large bowlder for the stone wheel of the "trapiche," which, being lashed to the end of the axle, is dragged over the metals, thus milling them by friction.

Thousands of these "arrastras," "volantes," and "voladoras" are scattered about the abandoned works of Araca, the silent witnesses to the vast mining operations of the early Spaniards at that point.

Plata piña.—The ore being thus milled is next subjected to the ordinary processes of amalgamation and washing, and the metal is then taken up by quicksilver and placed in cast-iron patterns and pressed, thereby giving it form and expelling a large percentage of the quicksilver, when it is removed from the press and placed in a retort, where the remaining quicksilver is distilled, leaving as the finished product a porous mass of pure silver in the shape of a pineapple; hence its Spanish name "plata piña," or silver pineapple.

This is the class of silver used for coining and in the industrial arts, while large quantities are clandestinely taken out of the country, thus escaping the payment of the export duty of 80 cents per marc.

This process was first introduced by the early Spaniards and was a great advance over the smelting process they found in use among the ancient Indian miners, which consisted simply of small cone-shaped furnaces, called in the Aymara language "guayra," meaning blasts, built upon the tops of the hills and mountains, where the strong winds rushing through the air funnels in the sides of the furnace fanned the charcoal fires within until the metal was separated from extraneous substances.

LOCATION OF THE SILVER DEPOSITS OF BOLIVIA.

Beginning at Tupiza, the capital of the province of Chichas, in the extreme south of the Republic, and running directly northwest through Huanchaca, Potosi, Oruro, Sicasica, and La Paz, on up through the shore provinces of Lake Titicaca, and terminating in the Sotolaya district of the department of La Paz, are the great silver and tin mountains of Bolivia, covering a vast territory of about 300 leagues long and 70 leagues wide, over the whole of which are scattered the old workings of the Spaniards.

ABANDONED MINES.

At intervals of every 15 or 20 miles within this great silver belt are to be seen the old, abandoned mines of the Spaniards, the traces of whose vast operations represent results achieved through the enforced and unpaid labor of the Indians that, in the light of our modern methods of mining and just consideration for labor, seem incredible.

One can not travel through the zigzag tunnels and down the tortuous declivities of these old Spanish mines, which always followed the lode in utter disregard of the proper and permanent development of the mines, without being impressed that these cruel old taskmasters, like guilty men, hastened to secure their ill-gotten gains with all possible speed, as though conscious that their savage brutality in forcing the poor Indian to toil in the mines unpaid and practically unfed must bear its just fruits, as it ultimately did in their final expulsion from the land of their oppressions at the hands of those they so sorely oppressed.

Señor José Maria Dalence, in his rare and interesting "Bosquejo Estadistico de Bolivia," published in Chuquisaca in 1851, after a careful personal investigation of the subject by departments, provinces, and mining districts gives the number of mines abandoned and the number in operation in Bolivia in 1848 as follows:

Table showing the number of silver mines abandoned and in operation in Bolivia in 1848.

District.	Number of mines abandoned.	Number of mines in operation.
Potosi	1,800	26
Porco	1,519	33
Chayanta	130	8
Chichas	650	22
Lipez	760	2
Oruro	1,215	11
Poopo	316	15
Carangas	285	4
Sicasica	320	9
Inquisivi, department of La Paz	160	5
Ayopaya, Beni, Santa Cruz, and other sections not enumerated	2,845	.....
Total	10,000	134

As indicating the ratio of worked to abandoned gold mines at the same period (1848), the following figures will suffice:

District.	Abandoned.	Worked.
Oruro	.....	200
Araca	4	500
Sorata	7	500
Argue	2	100
Total	13	1,300

These figures, which may be taken as approximately correct, are the more interesting and instructive because the intervening forty-three years have not served to materially change them. The general condition of gold-mining has remained unchanged since 1848, while the number of silver mines actually worked has but slightly increased; and yet the enlarged capital employed and the improved methods of mining and of treating silver ores introduced in certain districts in recent years, notably Potosi, Huanchaca, Colquechaca, and Oruro, have resulted in a steady increase of production, until the total silver produced by the Bolivian mines for the calendar year 1890 was $11,020,691, as against about 9,790,000 pesos in 1848 (the peso being 80 cents).

If united capital and improved methods of work thus so sparingly employed in Bolivia since 1848 have wrought the increased production named without any appreciable addition to the number of mines worked, it is apparent that, with these same conditions applied to the ten thousand abandoned mines of the old Spaniards and to the greater unexplored riches of the vast

silver belt of the Republic already described, supplemented by the necessary transportation facilities which railroads alone can supply to this country, the annual silver production of Bolivia would be second to no country in the world.

HISTORICAL OUTPUT OF BOLIVIAN MINES.

The causes leading to this remarkable decline in the number of mines worked in Bolivia since the period of greatest mining activity under the Spaniards must be looked for outside of the character of the mines themselves. The system of rifling the mines for immediate gain, instead of systematically developing them for greater and more enduring results, as practiced by the Spaniards; the treatment of the Indians and their consequent revolt and butchery of their oppressors and wanton destruction of the mines; the war between Spain and England; the famine of 1804; the protracted war of independence, ending in 1825 with the expulsion of the Spaniards and complete prostration of the mining industry; and the impoverished condition of the country that followed, would seem to furnish a sufficient combination of causes to account for the wholesale abandonment of the mines described; but the following figures seem to clearly demonstrate that the character of the mines of Bolivia did not enter into the account.

The records kept at Potosi, the location then as now of the public mint, of the fifths that accrued to the royal treasury from 1545 to December 31, 1800, show that the mines of Bolivia produced during that period 3,339,262,032 Spanish hard dollars. The same record shows that of this sum the mountain of Potosi alone produced during the same period of two hundred and fifty years the following:

Years.	One-fifth to Spanish Crown.	Total production.
	Bolivianos.	
1545–'56	4,873,000	$24,365,000
1556–'78	9,802,257	49,011,285
1579–1736	129,509,939	611,256,349
1736–1800	162,804,123	848,315,508
Total	306,989,319	1,532,948,142

The chief source of this vast production of the mines of Potosi, next in point of wealth to those of Guanajuato, in Mexico, was the superficial stratas of "pacos" ores, known as "Colorados" in Mexico, and also chlorides of silver, a class of surface ores common to Bolivia, Peru, and Mexico.

To this sum of $3,339,262,032 produced from 1545 to 1800 must be added the production from 1800 to 1825, the date of Bolivian independence, viz, $67,004,003, making a total of $3,406,366,035, which sum, barring the amount produced from the date of the conquest in 1532–'45, for which period no reliable statistics are available, represents the total production of the silver mines of Bolivia during the two hundred and ninety-three years of Spanish rule in Alto Peru, the ancient name of Bolivia.

Table showing the silver production of Bolivia from 1545 to 1846.

Years.	Production.	
	Spanish dollars.	*Pesos.*
1545–1800	3,339,262,032	
1800–'6	21,186,460	
1806–'11	16,288,590	
1811–'16	10,789,816	
1816–'21	9,749,350	
1821–'26	9,089,787	
1826–'31		9,784,620
1831–'36		9,848,342
1836–'41		9,678,420
1841–'46		9,789,640
Total	3,406,366,035	39,101,022

CONCLUSION.

Not only are the silver and gold deposits of Bolivia abundant and rich, but in no part of the world, with the possible exception of California, do they find a wider distribution than here; and yet present conditions are not favorable to their cheap exploitation. The time is not far distant, however, when all this will be changed, and from the Bolivian cordillera will be secured an enormous increase of the world's annual production of the precious metals.

It is apparent to the most casual observer that the country is slowly but certainly awakening to the great possibilities of its mines, and that the investment of foreign capital in this field is steadily increasing, while vastly better facilities for mining the ores and extracting the metal are being supplied in certain of its mining centers.

Mr. Arthur F. Wendh, of New York, as constructing engineer of the Real Socavon de Potosi, an English company, recently completed the construction of a large amalgamation plant for that company, and is now building a 100-stamp mill and smelter at Antofagasta for the Huanchaca Company, while important improvements are projected in a few other districts.

The matters of first consideration, however, in the problem of successful gold and silver mining in this country are cheaper transportation and cheaper fuel. The Government, recognizing these as prime essentials, has recently granted liberal concessions for the construction of railways to the mountain districts and navigable rivers of eastern Bolivia and to its western frontier, with branch lines connecting many of the principal mining centers. With these lines once in operation, bringing cheap lumber and fuel from the great timber districts of the mountains and furnishing cheaper transportation between the mines and the coast, present conditions will vanish, and for the first time in the history of the country the opportunity will be presented for the safe investment of the large capital essential to profitable mining in this country; and, from being the third silver-producing country of the world, Bolivia will probably become the first.

T. H. ANDERSON,
Minister.

UNITED STATES LEGATION,
La Paz, November 24, 1891.

SUPERPHOSPHATES IN AUSTRALIA.

REPORT BY CONSUL-GENERAL WALLACE, OF MELBOURNE.

I have the honor to inclose herewith a letter, dated September 15 last, from John W. Duthoit, manager of the Victorian Farmers' Loan and Agency Company, of Geelong, who are the only parties in the colony that I can learn of engaged in the manufacture of artificial manures.

Mr. Duthoit stated that "but little interest is taken by the farmers generally in the subject." New, or virgin, land is still plentiful, and the practice of the special farmer has been, where the soil in one section appeared to be exhausted for his special crop, to sell out and move to new soil.

There has been during the past year a large emigration of farmers from South Australia to Victoria claiming to be leaving soil in that colony which has been exhausted in wheat-raising and seeking new ground in the "Mallee" section of Victoria.

The letters of Mr. Duthoit, with the accompanying papers—the "Farmers' Guide to Manuring" and the "Analysis of Soils"—would indicate that there was an awakening interest in the subject. The price list of the Victorian Farmers' Loan and Agency Company is as follows:

Price list of the Geelong patent chemical manures for special concentrated mixture per ton.

	£	£ s.
For peas, beans, vetches, lucern, clover, etc		11 10
For wheat, oats, barley, rye grass, hay, etc		13 5
For root crops, such as mangel-wurzels, etc		15 0
For potatoes		14 10
For maize, sorghum, amber, cane, etc		15 0
For vines, orchards, etc		14 0
For tobacco		15 0
For hops		14 0
For vegetables and garden stuffs generally		15 10
Bone dust		6 0
Bone meal		6 5
Superphosphate	7 to 9	0

The manager says the question is so little understood that prices, with reference to the "reverted" or "precipitated" phosphate or "the unit of phosphoric acid," is not taken into consideration—simply results looked to for guidance in the future.

The letter of E. G. Duffus, for the secretary for agriculture, answers most of the questions propounded. Dealers in flower and garden seeds state that "small quantities of artificial manures are bought by the florists and gardeners near this city." The sales in the aggregate amount to considerable, but I could not learn the amount.

The Messrs. Fison, mentioned by the secretary, are agents or the colonial house of a firm at Ipswich, England.

The customs authorities report the following importations for the year 1890 by countries, quantities, and value:

Articles and whence imported.	Quantity.	Value.	Duty.
Acid:			
Unenumerated—			
United Kingdom.....cwts...	51	£78	5s. per cwt.
New South Wales.....do.....	3	10	Do.
Total.....do.....	54	88	
Other unenumerated—			
United Kingdom.....pounds...	439,133	22,468	Free.
New South Wales.....do.....	15,868	867	Do.
New Zealand.....do.....	448	29	Do.
South Australia.....do.....	1,568	119	Do.
Germany:			
Hamburg.....do.....	67,908	4,172	Do.
Bremen.....do.....	43,751	2,277	Do.
Italy.....do.....	8,953	475	Do.
United States, east coast.....do.....	560	30	Do.
Total.....do.....	571,189	30,437	
Bones:			
New South Wales.....tons...	76	231	Do.
New Zealand.....do.....	2	5	Do.
Total.....do.....	78	236	
Manures, undescribed:			
United Kingdom.....do.....	3	63	Do.
New South Wales.....do.....	1	8	Do.
New Zealand.....do.....	1	1	Do.
Queensland.....do.....	23	80	Do.
South Australia.....	.....	2	Do.
Western Australia.....tons...	410	2,050	Do.
Germany (Hamburg).....do.....	27	272	Do.
Total.....do.....	465	2,476	
Sulphur:			
United Kingdom.....cwts...	24,692	5,446	Do.
France (Marseilles).....do.....	297	195	Do.
Germany (Hamburg).....do.....	415	198	Do.
Italy.....do.....	14,107	2,812	Do.
Sicily.....do.....	8,320	1,700	Do.
Total.....do.....	47,831	10,351	

GEO. H. WALLACE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Melbourne, November, 1891.

MR. DUTHOIT TO CONSUL-GENERAL WALLACE.

[Inclosure 1 in Consul-General Wallace's report.]

GEELONG, *September 15, 1891.*

SIR: We beg to acknowledge receipt of your favor of the 9th instant, and note with interest all you say therein.

The wholesale prices of superphosphate range from £7 to £9 per ton. We do not know that these prices are in any way calculated on a standard basis per unit, though we are quite

aware that this is the customary method in countries where manure trades are thoroughly established and worked in a scientific manner; but you must understand that in this country it is the merest incipient growth as yet. In fact, the greatest difficulty is to get the farmers to be bothered, though, sure enough, they will have to be by and by. As the trade is at present, the farmer just buys from any manure merchant whom he fancies. This manure merchant simply buys bones and grinds them, converting them into superphosphate, and sells them at what he considers a margin of profit. You can thus see at a glance how primitive it is.

The superphosphates that we sell are made from bone char and contain from 16 to 20 per cent of phosphoric acid in soluble and reverted form. Of course, you are aware that the reverted is only a little less valuable than the soluble itself, as it must be by no means supposed that the use of the term "reverted" implies that it is reverted to its former state. It merely implies, as you probably know, that it is not quite so readily soluble as the other.

Our own trade is only starting to grow, and very tedious work it is to get it started. When it takes sufficient shape to warrant the expense, it is our intention to retain the services of an analyst, who will, by making constant daily analyses, enable us to work on a standard of analyses in preparing our various special mixtures. At present it is simply our practice to calculate upon the known ingredients of their component parts in arriving at a computation of their analytical properties, which thus enables us, by careful mixing and the aid of an occasional analysis, to work to a fair average standard.

We have, etc.,

JOHN WM. DUTHOIT.

MR. DUFFUS TO CONSUL-GENERAL WALLACE.

[Inclosure 2 in Consul-General Wallace's report.]

MELBOURNE, *September 22, 1891.*

SIR: I have the honor to report, for your information, that the agricultural chemist of this department states that the phosphatic manures used in this country are, for the most part, made in the colony and derived from bones. We do not use all our phosphatic material, so that there is generally a certain amount of bone dust or superphosphate made therefrom available every year for export. Notwithstanding this fact, however, there are enterprising importers who succeed in obtaining a sale for imported phosphatic manures. Messrs. Joseph Fison & Co. are the chief importers, I believe. Their manures are all superphosphates, either alone or mixed in various proportions with nitrogen salts and potash salts. Their superphosphates are, I believe, generally from phosphatic rocks or so-called mineral phosphates. The superphosphates made in the colony are not made from phosphate rock, but from bone dust and bone char (the spent char of sugar refineries). The sulphur for the manufacture of sulphuric acid is imported from England. We have not yet discovered any deposits of phosphatic rock, such as have been discovered in America, but we have several guano deposits which are rich in phosphoric acid and nitrogen.

I have, etc.,

E. G. DUFFUS,
Secretary for Agriculture.

THE FARMER'S GUIDE TO MANURING.*

[Inclosure 3 in Consul-General Wallace's report.]

The increased attention now being given in Victoria to the subject of manuring has rendered it advisable that every farmer should have in his own hands a sure guide to the use of manures. The best crops to which to apply the manures, the quality of the manures, and the quantity are all matters which require practical consideration. If attention be given to these matters, manuring becomes far more profitable than when carried on in a haphazard and unsystematic way. Often 10*s.* an acre may be saved, where otherwise it would be uselessly expended;

*Published by order of the Hon. J. L. Dow, minister of agriculture, Melbourne.

and, on the other hand, it is not infrequently the case that, by laying out an extra 10*s.* in manures, an extra 20*s.* or 30*s.* may be obtained in the return of produce.

The great value of manuring has been recently shown to the farmers of this colony by means of the experimental fields established in connection with the department of agriculture. For the complete results of these fields, those interested may be referred to the report on experimental fields about to be published by the department. In that report instances will be shown where increased profits, varying from 10*s.* to £5 per acre, could have been obtained by a judicious outlay on suitable fertilizers. Two of those instances may here be noticed. From one of the manured plots at the Mooroopna field (under the charge of Mr. Joseph Knight, member of the council of agricultural education) barley was obtained at the rate of 50 bushels to the acre. The yield obtained from the same soil without manure was (calculated from two unmanured plots) 15 bushels. So that 35 bushels increased crop was obtained by manuring. The cost of the manure which yielded this increase was 50*s.* per acre, and the profits may be thus shown:

	£	*s.*	*d.*
35 bushels increased yield of barley per acre, at 3*s.* 6*d.* per bushel	6	2	6
Cost of manure per acre	2	10	0
Profit per acre	3	12	6

The profit in this instance was 145 per cent on the outlay for manure.

On one of the plots at the Balaclava field (under charge of Mr. J. B. Lempriere) peas were obtained at the rate of 24⅓ bushels per acre. The average of two unmanured plots gave a yield of 6⅓ bushels; so that an increase of 18 bushels per acre was due to the manuring. The manure which produced this result cost 20*s.* per acre, and the profits may be thus shown:

	£	*s.*
18 bushels increased yield of peas per acre, at 3*s.* 6*d.* per bushel	3	3
Cost of manure per acre	1	0
Profit per acre	2	3

The profit was 215 per cent on the outlay for manure; and there was reason to suppose in this case that, if double the quantity of manure had been used, double the increase would have been obtained.

Perhaps no more decisive instance of the value of manures could be given than that afforded by the experimental field at Dandenong (under charge of Mr. F. G. Cuningham). The soil on which this field is situated will, in its natural state, grow no cultivated crops. On the unmanured plots of the field the crops were not worth gathering. But with manure crops of peas and sorghum were obtained equal almost to any in the colony; and the wheat, although badly rusted, was estimated at over 30 bushels to the acre.

It is instances of this kind which bring home to one's mind what it is possible for a shrewd farmer to achieve by judicious manuring. There can be no doubt that if agriculturists could see on their own land profits such as those above mentioned, they would use fertilizers to the full extent, and the results would be to their own benefit and the increased prosperity of the country generally.

Farmers may readily see for themselves what results can be obtained on their own land by the simple plan of laying out a few experimental plots, putting different dressings of manures on these plots, and weighing the produce from each. And, in order to encourage farmers to do this, the following description of a small experimental field, of the method of laying it out, and of the use to be made of the results is published for general information:

The points to be attended to in manuring a soil are four, namely: (1) The climate, (2) the amount of plant food already contained in the soil, (3) the mechanical condition of the soil and its sweetness, and (4) the kind of crop to be grown.

The effect of the climate is well known to every farmer. There are some climates, for instance, which admit of 80 bushels of wheat being obtained from the acre, others which admit

of only 50 bushels, and others of only 20 bushels, and so on. The rule for manuring is that the more there is taken out of a soil in the way of produce the more must be put in in the way of manure. And, on the contrary, the less crops a climate admits of being grown the less manure is required. Thus it will be seen that the quantity of manure which a farmer may use with profit varies considerably according to locality and season. In order that every farmer may find out this quantity for himself, he should lay out four small plots of equal size; one of these should be left without manure, and on the other three varying quantities of the same manure should be applied. The same quantity of seed should be sown on each plot, and at harvest time the produce from each should be separately harvested and weighed. These four plots in an experimental field are called the "quantity plots." The quantity which may be used with greatest profit will vary a little from season to season. But, after a few seasons' experience, the farmer can arrive at an average, which should be taken for practical use.

The second point to be considered is the amount of plant food already contained in the soil; in other words, the chemical composition of the soil. Ten of the ingredients of a soil are necessary as food for plants. Of these ten, six are either present in inexhaustible quantities in all soils or they get into the soils in conjunction with more important constituents applied as manures; so that in practice one has to pay attention to only four of these ingredients. And it is well that farmers should bear in mind the names of these four ingredients; they are nitrogen, phosphoric acid, potash, and lime. All chemical manures consist of one or more of these four ingredients. If the four ingredients are present in a manure, it is called a "complete manure." The proportions in which these ingredients shall be mixed together for the manuring of a soil will vary considerably, according to what is already contained in the soil, so that it is necessary to find out the quality of the manure to be used. For this purpose a number of plots, called "quality plots," are laid out in a manner similar to the quantity plots already mentioned; on one of these quality plots a dressing of a complete manure is given, consisting, as already pointed out, of the four ingredients—nitrogen, phosphoric acid, potash, and lime; on another of these plots the same manure is given, except that one of the ingredients—as, for instance, nitrogen—is left out. Now, if the soil already contained sufficient nitrogen, the same yield will be obtained from the second of these two plots as from the first. But, if the soil does not contain sufficient nitrogen, the second plot will give a less yield than the first, and the difference between these two yields will be a measure of the amount of nitrogen that should be given in the form of manure. And the same with regard to the other ingredients. One plot, however, serves for both the phosphoric acid and lime, since these two substances are always purchased together in the form either of bone dust or of superphosphate of lime. Thus, the experimental field should contain three quality plots.

The third point to be considered is the mechanical condition of the soil and its sweetness. If a soil be too heavy, it may be rendered lighter by liming; if it be too loose and light, it may be rendered firmer by moderate liming; and, if it be sour, it may be sweetened by liming. To test the requirements of a soil as regards liming two "limed plots" should be added to the experimental field.

The fourth point to be considered is the kind of crop to be grown. This point is one of importance, because different crops require the food ingredients to be present in the soil in different proportions. Thus cereals require nitrogen to be the dominant ingredient; peas, beans, and other *Leguminosæ* need no nitrogen; potatoes and root crops require phosphoric acid to be in excess. In laying out an experimental field the particular crop which it is intended to grow the next season should be sown on the plots this season, and manures specially mixed for cereals, *Leguminosæ*, or root crops should be selected according to whichever kind of crop is about to be grown.

Complete sets of manures and of lime, weighed out, mixed, and labeled for each plot can be obtained at 15*s*. per set from any of the following firms: Messrs. Cuming, Smith & Co., 47 William street, Melbourne; Messrs. Blyth, Irvine & Binney, 22 King street, Melbourne; Messrs. James Fry & Co., Robb's Buildings, Collins street, Melbourne.

There are three sets of these test manures—one set for cereals (wheat, barley, oats, hay, grass), called set C; one for pod plants (peas, beans, lucern, clover, vetches, and other leguminous plants), called set L; and another for potatoes and root crops, called set R.

The laying out of these test plots is quite simple; in fact, no special laying out is necessary. All that is required is to take equal lengths of ten of the lands of a plowed field. The furrows between the lands will be sufficient to separate the different plots. The only point requiring attention is that the lands shall all be of the same width and uniform throughout. The length of the plots to be taken will vary according to the width of the lands, and should be such that each plot will be one-fortieth of an acre in extent.

If the lands, measured from the middle of one furrow to the middle of the next, be 9 feet wide, the length taken should be 121 feet; if 10 feet wide, 109 feet; if 11 feet wide, 99 feet; if 12 feet wide, 91 feet; if 13 feet wide, 84 feet; if 15 links wide, 1 chain 67 links; if 16 links wide, 1 chain 56 links; if 17 links wide, 1 chain 47 links; if 18 links wide, 1 chain 39 links; if 19 links wide, 1 chain 31½ links; if 20 links wide, 1 chain 25 links; if 21 links wide, 1 chain 19 links; if 22 links wide, 1 chain 13⅔ links.

Quantity plots.—No. 1, complete manure, light dressing; No. 2, complete manure, medium dressing; No. 3, no manure; No. 4, complete manure, heavy dressing.

Quality plots.—No. 5, without nitrogen (phosphoric acid and potash, same as No. 2); No. 6, without phosphoric acid (nitrogen and potash, same as No. 2); No. 7, without potash (nitrogen and phosphoric acid, same as No. 2); No. 8, no manure.

Limed plots.—No. 9, limed and manured same as No. 2; No. 10, limed and manured same as No. 5.

A strip 2 or 3 feet wide should be left bare and kept free from weeds at each end of the field.

It is needless to say that the site chosen for the test plots should contain a fair average representation of the whole of the soil it is intended to manure. If the soil varies to any great extent on different parts of the farm, then it will be advisable to have three or four test fields.

The above plan represents one of these fields.

Having fixed upon the site of the field and pegged out the plots, the next thing to be done is to apply the lime to plots 9 and 10. There are two bags of slaked lime supplied with each set of the test manures; one bag is for each plot. The lime should be sown broadcast or by drill as uniformly as possible, care being taken that none goes over to the other plots. After it has been sown it should be left lying on the ground for two or three weeks, in order that it may be washed in by the rain. The manures may then be applied, and the seed sown at any convenient time. The bags of manure will be found numbered according to the plots on which they are to be sown. They may be sown by hand, but preferably by drill. It is important that they should be spread as uniformly as possible. For cereals and leguminous plants the manures may be sown just before the seed, and then harrowed in with the seed; for potatoes and root crops they should be spread a few days before sowing and deeply harrowed in. The same quantity of seed should be sown on each plot. At harvest time the crop from each plot should be gathered and weighed separately.

On forwarding the results so obtained to the department of agriculture, a recipe showing the exact composition of the most profitable manure will be supplied by the chemist to the department. On forwarding this recipe to any of the above-named manure manufacturers, a manure ready mixed will be furnished, under guaranty that within reasonable limits it has the composition required by the recipe. The department of agriculture will do what is possible to insure that the guaranty shall be respected.

Of the method of estimating the manure requirements of a soil by means of these test plots little need be said, but a brief illustration of this method may not be uninteresting.

On plot 1 a complete manure is applied at the rate of 2½ cwts. to the acre; on plot 2 the same manure is applied at double that rate, and on plot 4 at treble that rate. Now, let it be supposed that plot 1 yielded barley at the rate of 30 bushels to the acre; plot 2, 42 bushels; plot 4, 47 bushels; and that plot 3, unmanured, yielded 18 bushels. Comparing plot 1 with

plot 3, it is seen that 2⅓ cwts. of manure have resulted in an increase of 12 bushels of barley per acre. Again, on comparing plot 2 with plot 1, it is seen that an additional 2⅓ cwts. of manure have yielded an additional 12 bushels of barley. On comparing, however, plot 4 with plot 2, it is seen that still another additional 2⅓ cwts. have resulted in an additional yield of only 5 bushels. It is therefore seen that the quantity of manure which can be used with the greatest profit lies somewhere between 4⅔ and 7 cwts. It would be safe to put it down at 5 to 5½ cwts. per acre.

Now, as to the quality of the manure. All the quality plots are made for comparison with plot 2. It has been supposed that plot 2 yielded 42 bushels of barley per acre. Plot 5 is manured the same as plot 2, except that no nitrogen is given. Now, if plot 5 gives just as good a crop as plot 2, it is seen at once that nitrogen given in the manure is unnecessary; it does no good; the soil already contains sufficient nitrogen. We may therefore leave nitrogen out of the manure altogether; and, as nitrogen is the most expensive constituent of manures, this will be a great saving. Suppose, however, that plot 5 yielded only 18 bushels per acre, that is to say, no more than the unmanured plot, it would be seen that the soil was greatly wanting in nitrogen, and that the whole of what had been given in the manure was necessary. Let it again be supposed that the yield from plot 5 was halfway between the yield from plots 2 and 3, and it would be seen that some nitrogen was necessary, though not so much as had been given in the manure; half the quantity would have been enough. In the same way, by comparing plot 6 with plot 2, the amount of phosphoric acid required is ascertained; and by comparing plots 7 and 2, the amount of potash required is ascertained.

In conclusion, farmers and all engaged in cultivating the ground are earnestly recommended to give a trial to this system of test plots. Many of those who have once tried them will find the results obtained from them so useful that they will be glad to continue their use from year to year, and so make them, what they should be, a certain and constant guide to manuring. By making constant use of them farmers can see from season to season what manure to put into their land, and they will see for themselves what return they will get for that manuring. Thus, instead of working in the dark, they will know exactly how they are laying out their money. It is said that farmers, as a rule, will not lay out £1 in manuring if they can help it, and they are quite right. But, if they see with their own eyes that by laying out £1 they can get 30s. or £2 return as a certainty, there can not be the slightest doubt that they will lay out that £1. And it is to be borne in mind that the indications of these test fields, after they have been used for three or four years, so that the seasons' average may be obtained, are certain.

Some farmers will say that they do not require to manure their land; it is rich enough already in its natural state. There are not many soils now left in Victoria that would not be benefited by manuring. But, if a farmer be of opinion that he is one of the fortunate possessors of such a soil, he will be the gainer by using one of these test fields; for, if the field results in showing that his soil is so good that it can not be improved by manuring, he will be gratified by that confirmation of his opinion. If, however, it should result in showing that the soil can be profitably improved by manuring, then he will have opened before him an avenue of gain which was before unseen.

A. N. PEARSON,
Agricultural Chemist.

FEBRUARY 13, 1888.

THE ANALYSIS OF SOILS.

[Inclosure 4 in Consul-General Wallace's report.]

The agricultural chemist of this department, Mr. A. N. Pearson, F. R. M. S., etc., has reported as follows:

The analysis of soils is indispensable to exact farming. It is only by analysis that that careful economy in manuring, which is essential to the highest success of farming, becomes possible. There are two methods of analysis which may be adopted; one is the method

of field analysis by means of test plots, and the other is the chemical analysis. For most purposes the method of analysis by means of test plots is by far the most suitable, because its results are more definite and because it takes into account the influence of the climate. But there may be cases where the method of test plots fails to give a sufficient answer; and, moreover, there are cases where this method can not be applied, as, for instance, where it is desired to know whether a swamp is worth the expense of draining or where it is desired to ascertain whether a proposed new selection contains good soil or poor. In such cases the chemical analysis is to be resorted to.

The method of analysis by test plots is described in the "Farmer's Guide to Manuring," published by this department.

For the chemical analysis it is necessary that samples of the soils should be gathered in the following manner:

(1) Make a small, clean cutting. The cutting should have one side sloping, which should reach down to the bottom of the soil, but should not cut into the subsoil.

(2) Take out with the spade a perpendicular slice of soil weighing about 4 or 5 pounds. Put the earth so obtained into a clean box or bag.

(3) Then dig down into the subsoil and take a perpendicular slice of the subsoil; and put this into another clean box or bag.

(4) To obtain a fair average sample of the field, at least a dozen such cuttings should be dug out at spots regularly distributed over the field, the soil from each cutting being put into the box or bag containing the first sample of soil, and the subsoil from each cutting being put into the box or bag containing the first sample of subsoil.

(5) The box or bag of soil should without delay be turned out on to a clean board or flagstone, and, after the soil has been well mixed together, about 6 pounds of it should be put into a clean tin or into clean bottles. The stones, except the large ones, should not be removed from the soil.

(6) The subsoil having been mixed in the same way, about 3 or 4 pounds of it should be put into another bottle or tin.

(7) If the soil in different parts of the field is manifestly of different qualities, samples of each kind should be forwarded.

(8) In forwarding the samples it should be stated:

(*a*) Whether the soil is from level country, swamp, alluvial land, or from hill country; if from hill country, the aspect should be stated.

(*b*) If it is virgin soil, whether it is forest or open country. If forest, the kind of trees and undergrowth should be mentioned; if open country, the kind of grasses growing on it and their feeding value.

(*c*) If it is in cultivation, how long it has been cultivated, what was the last crop, when and what was its last manuring, what has been the manuring and the rotation of crops in previous years, what has been the yield per acre, and what is considered a good yield in the district.

(*d*) Whether the land is drained or not.

(*e*) What is the nature of the climate and seasons of the district, and what kind of weather prevailed for the few days previous to taking the sample.

(*f*) What lies below the subsoil.

(9) State what special information it is desired that the analysis should furnish.

The minister of agriculture has approved of analysis of soils being made free of charge by Mr. Pearson for all persons connected with agriculture who may desire it.

The samples, when obtained in the manner indicated, should be forwarded to Mr. Pearson, with carriage prepaid.

D. E. MARTIN,
Secretary for Agriculture.

MELBOURNE, *March 12, 1888.*

THE ELECTRIC LIGHTING OF MALTA.

REPORT BY CONSUL WORTHINGTON.

Referring to a former report, I beg that this may be considered to be a continuation thereof, in that it treats of the same subject, *i. e.*, the project of introducing the electric light in Malta.

Mr. Preece's report was printed in the Malta Government Gazette of the 11th instant, two copies of which I herewith transmit. The report is very clear in stating the probable cost of establishing the electric light in this island and also the price per lamp consumers would be called upon to pay. The report makes valuable comparisons in the cost of lighting various European cities. It shows that the principal towns of Malta can be lighted better and cheaper by electricity than they now are by gas.

It is to be noticed that Mr. Preece strongly urges that the Malta government, and not private individuals or companies, shall undertake the carrying out of the work of installing the electric-light system in the island. Should this be determined on, manufacturers who obtain the contract for supplying the plant would be absolutely safe against any loss.

I think our American manufacturers of electrical plants should try for this job. I will keep you informed of the movement as it advances, but I think it is even now the time for our people to ask the Malta government, through the chief secretary, for a chance to bid when the project is settled upon.

JOHN WORTHINGTON,
Consul.

UNITED STATES CONSULATE,
Malta, January 12, 1892.

ELECTRIC-LIGHT STATISTICS.

[Inclosure 1 in Consul Worthington's report.—From the Malta Government Gazette of January 11, 1892.]

Mr. Preece to Lord Knutsford.

GENERAL POST-OFFICE, *December 29, 1891.*

In reply to request of November 25, I have the honor to submit my observations upon the dispatch from the governor of Malta relative to the proposed introduction of the electric light into that colony.

I must at once disclaim any intention of dealing with this question in any spirit antagonistic to the gas interest. I do not believe that the introduction of the electric light into Malta will seriously affect the commercial position of the gas company. Their proper function is the supply of heat and power, not that of illumination. Illumination is best obtained by electricity. Gas burnt in a gas engine employed to work a dynamo gives three times the amount of light it does when burnt direct, and the light is pure, steady, cool, and healthy. The introduction of the electric light into a hot district like Malta is really a sanitary and philanthropic movement, and it is more on these grounds that I urge its adoption than for commercial reasons. Yet even on commercial grounds it shall be shown to be beneficial. The cost of the production of gas is going up, that of electricity is coming down.

As regards figures, both in Malta and London, I have only acted on information given me. I used the latest returns available. The discrepancy of my figures is not material to the points at issue, and I do not propose to verify them. The more important question of the relative price of gas and electricity is not affected, nor is that of their relative advantages and disadvantages.

Mr. Starkey the general manager of the Malta Gas Company discusses the cost per unit of electrical energy, and in doing so treads on very dangerous ground, where his information is very deficient. I will reply to his statements seriatim:

"(1) For the purpose of comparison, it may be taken for granted that the board of trade unit, mentioned by Mr. Preece as the measure of electrical energy, is equal to 100 cubic feet of the gas supplied in Malta."

Light for light, 100 cubic feet of 16-candle-power gas in the laboratory, with proper care and careful adjustment, burnt in argand burners, may equal one unit of electrical energy; but in actual practice, with dirty burners, drafts of air, and ordinary usage, the proportion becomes 130 cubic feet of gas to one unit of electrical energy. This has been proved experimentally by Mr. Vernon Harcourt, F. R. S., of Oxford, one of the gas referees of the board of trade, and by Dr. John Hopkinson, F. R. S. I have also verified the fact by careful tests at the post-office, London.

"(2) But in all cases where electric light has been supplied under ordinary commercial conditions—and not for the purpose of advertisement—it has been proved that the cost price has never been under 7*d*. per unit, and the selling price necessarily something more. A charge of 8*d*. per unit has therefore been considered a low charge for electric light when produced under favorable circumstances. Ordinarily 9*d*. and 10*d*. per unit is charged, and the profit available for dividend is then extremely small."

Mr. Starkey speaks of the ordinary commercial supply of electric light and ventures the somewhat startling assertion that "it has been proved that the cost price has never been under 7*d*. per unit."

We (the general post-office) are now paying to electric-light companies by measurement: In London, 6*d*. per unit; in Liverpool, 5*d*. per unit; in Newcastle, 3.6*d*. per unit.

Eight pence per unit is the maximum price allowed by the board of trade to be charged by companies or corporations in England supplying electricity for lighting purposes under parliamentary powers.

The actual cost of production, without allowing for interest on capital or the head office expenses (*i. e.*, the cost price at the station), in the case of two London electric-light companies, viz, the Kensington and Knightsbridge Electric Supply Company and the Westminster Electric-light Supply Corporation, is certified to be 1.98*d*. per unit. This is low, but other companies and corporations can produce electricity almost or quite as cheaply when the output is very large.

We find the cost of production in our post-office installation for smaller outputs is, as nearly as possible, 3*d*. per unit. It is quite clear, therefore, that in England we have reached a cost price that is considerably less than I estimated for in Malta, though my estimate was based on my own actual experience at the time.

"(3) At 8*d*. per unit the cost of electric light would be equal to gas at 6*s*. 8*d*. per 1,000 cubic feet, and applying this standard to the sum said by Mr. Preece to have been paid by the different Government departments for gas, viz, £8,968, it follows that, if the same amount of light had been obtained from electricity instead of from gas, the cost would have been £13,285."

At 8*d*. per unit the cost of electric light is equal to gas at 5*s*. 2*d*. per 1,000 cubic feet, while at 6*d*. per unit, the price proposed to be charged at Malta, it is equal to gas at 3*s*. 10*d*. The Government will not have to pay more for the electric light than they now pay for gas.

"(4) I may here observe, with regard to the determination of the actual amount of light, that the exact value of the light given by gas is easily ascertained, and varies but slightly from time to time of testing. On the contrary, the light given by electricity varies so greatly and so constantly that the actual value can only be ascertained by a continuous test, which, for ordinary purposes, is practically impossible."

It is quite clear that Mr. Starkey has on his mind the arc lamp, which does vary, but the glow lamp, which it is proposed to install in Malta, is absolutely steady and invariable. It is the most beautiful light ever produced.

"(5) Mr. Preece gives no evidence whatever in support of his estimate that £40,000 will be sufficient to establish works for the supply of electric light in Malta; nor does he refer to the establishment of similar works elsewhere. But, as a matter of fact, the highest authority on electric lighting—the late Sir William Siemens—in his evidence before a parliamentary committee stated that the most economical mode of supplying electric light would be to have one installation to every district of one-fourth of a square mile, and that each of such installations would cost £100,000, or £400,000 per square mile of district to be lighted. Inhabitants of Valletta and the districts which Mr. Preece proposes to light can easily calculate for themselves how many square miles are to be supplied, and will probably require further information."

Mr. Starkey questions my estimate of £40,000 and adduces an estimate of the late Sir William Siemens made many years ago for the parish of St. James, one of the most crowded quarters of London, possessing a population of over 100,000. The parish of St. James is now lighted, and the capital expended in establishing the light was £65,981 11*s.* 9*d.*, according to their last published statement.

"(6) (*a*) As to the actual cost of similar works to those proposed for Malta, (*b*) of the charge per unit for electric light from those works, and (*c*) of the commercial results obtained from the business founded upon those charges. When these matters of information have been supplied the Malta public will be better able to understand what necessity there is for, or what benefit can possibly arise from, the speculative employment of the public funds, upon the possession of which so great a value has been hitherto set."

He asks for the actual cost of similar works to those proposed for Malta. I select three cases, viz:

Works.	Lamps.	Capital expended.
Bradford	9,500	£27,668
St. Pancras	20,000	51,855
Brighton	10,000	30,675

I can not give the details of the expenditure in the case of Bradford, but I do so in the other two cases—St. Pancras, with 20,000 lamps, and Brighton, with 10,000 lamps.

Description.	St. Pancras (20,000 lamps).	Brighton (10,000 lamps).
	£ *s.* *d.*	£ *s.* *d.*
Buildings	4,629 0 0	3,989 0 0
Boilers	3,674 10 0	2,734 0 0
Engines, dynamos, etc	16,327 0 0	7,997 0 0
Switch boards	1,313 1 9	.....
Batteries	2,745 12 6	5,242 0 0
Trenches	9,501 0 0	.....
Mains	12,756 0 0	.....
Instruments	.....	1,180 0 0
Cables	.....	9,096 0 0
Struts, boxes, etc	.....	437 0 0
Total	50,946 4 3	30,675 0 0
Add for royalty	909 0 0	.....
Grand total	51,855 4 3	.....

These figures are taken from the published records of the proceedings of the vestry and corporation. The works were carried out by the vestry and corporation under the advice and supervision of experienced consulting electrical engineers. The capital expended by private companies in carrying out similar installations will not bear comparison, for they are swollen by promotion money and other unknown expenses.

Now nearly all the older established electricity supply stations are paying their way. Taking the stock exchange last published share list of English electric-lighting companies, seven companies who are actually supplying current have quotations. Of these three have already paid dividends, and in the case of the other companies, although no dividend has yet been paid, yet the shares are quoted at a premium. The result is not brilliant, but it is encouraging. The experience all round is that well-devised schemes pay when properly established. At first there is a loss—it must be so from the very nature of the case—but after a year or two this is gradually reduced, until it is changed into a profit which as certainly will steadily increase.

The system of the Bradford corporation affords a capital example of what is to be expected. Mr. Starkey says there has been a considerable loss since the works were started. This is true, but he does not divide the loss over the various periods during which electricity has been supplied. The supply commenced in September, 1889. The total loss is spread over the various periods as follows:

September 29, 1889, to December 31, 1889 (3 months)	£1,079
January 1, 1890, to June 30, 1890 (6 months)	732
July 1, 1890, to December 31, 1890 (6 months)	315
January 1, 1891, to June 30, 1891 (6 months)	30

With respect to the last-mentioned figure, it was stated by the chairman of the electric-light committee, when presenting his report, that the sum of £150 really chargeable to capital account had been debited to revenue account. Had it not been for this they would have shown a net profit of £120 on the last completed half year's working. No details are to hand about the current half year, but it is known that a considerable profit will be made.

I submit that the Bradford experience does not tell against my contention, but very much in its favor, and Bradford does not stand alone. The experience all round, both with regard to supply by companies or by corporations, is that the corner is certain to be turned before long. In Bradford it has just been reached, in many places it is being approached, and in many others it has been passed, and the period of certain prosperity lies ahead.

In connection with this view of the subject, I append a report of an interview with Mr. T. E. Gibb, vestry clerk of St. Pancras, London. The St. Pancras system is one of the most recently started, and its success is already assured.

In my original report I estimated a rental of 24*s.* per lamp, assuming the plant fixed was working at its full capacity, that is, that it was supplying current to 10,000 lamps at one time, but we find by experience in London and elsewhere that the maximum number of lamps alight at one time is only 50 per cent of those fixed, and therefore a plant designed to maintain 10,000 lamps alight is capable of serving 20,000 lamps fixed. Thus the proposed capital expenditure admits of considerable expansion.

Our experience in England is daily proving more and more that the electric light is now actually cheaper than gas. In our post-offices it is improving the health of our staff so much that we find that the value of the extra services rendered pays for the light.

"(7) As regards the cost of the electric light to the public, Mr. R. Cook, 276 Strand, London, writes: 'When I had the electric light laid on first, the company handed me a circular in which they stated their charge would be 20*s.* per annum for 8-candle lamps, to be used not over an average of three hours per day. Shortly after this they declined to supply the light at a fixed price at all, and required a meter to be used. With this the result of something under 100 lamps has been a cost of upwards of 10*s.* per lamp for each of the winter quarters and about 7*s.* 6*d.* for the summer quarters, or 35*s.* per annum for 8-candle incandescent lamps.'"

The letter Mr. Starkey quotes appeared in the London press. Immediately on its appearance I sent my assistant to call on Mr. Cook. He could not be found, and although several attempts were made he has not been found yet.

"(8) There is considerable danger with the electric light. On July 28 last a child was struck to the ground and rendered insensible by the fall of an electric lamp at the Agricultural Hall, London; she afterwards died in hospital. The electrician in charge attributed the accident to a leak in one of the wires, which was burnt clean through, causing the lamp to fall. The lamp was not alight at the time; the wire was found to be hot after the accident; the electricity had found its way through the building from the switch 200 feet away.

"The whole of the telephonic communication in Bournemouth, and with Southampton, Poole, and other places was suspended by a fire in the telephone office, Bournemouth, which the officials state was caused by an electric-light current coming in contact with an iron roof standard to which the electric light wires were fixed, which fused the wires and brass work in the telephone office, damaged a great number of wires, and set the office woodwork on fire.

"The report of the directors of the London Electric Supply Association for the year 1890 admits that the fire at the Grosvenor distributing station practically destroyed the hopes of the company for the year. They had to shut off their supply just at the beginning of the bad weather, when they might have carried on the work at a profit, consequently they were not able to declare a dividend upon the preference capital.

"The recent failure of the electric light during a banquet at Hastings is only one instance that may be mentioned. In the early part of this year a fire occurred during a banquet at Cardiff, caused by an imperfect fitting, which gave rise to a short circuit. Other failures have occurred this year at Newcastle and Taunton."

Mr. Starkey refers to the danger of the electric light. I hope he does not pretend to assert that gas has not its dangers. It is impossible to take up a single daily paper without some reference to gas explosions somewhere. The Times has now a heading "Fires and Gas Explosions." All systems of artificial illumination have their dangers. Oil is perhaps the most serious. The following return may be useful; it is taken from the London returns:

Table showing the danger of fire from different systems of lighting.

Systems.	1887.	1888.	1889.	1890.	Total.
Candles	142	113	136	165	556
Gas	188	197	209	219	813
Lamps	245	205	257	491	1,198
Electricity		1	2	2	5

Damages to premises from fire due to electric lighting where the system is properly installed is practically impossible.

He also refers to its failures. The Royal Naval Exhibition was opened from May to November; there was no failure of any kind with the electric light which was used throughout the exhibition.

We have 1,600 lamps installed in the general post-office here since December, 1890. There never has been a failure. The whole of Kensington has been lighted by two companies for over two years without a single stoppage of light. It may be said that wherever the work has been thoroughly and perfectly done failures and accidents have never occurred, but in temporary installations, undertaken hastily, like the Agricultural Hall in London, a banquet hall in Hastings, or the Drill Hall in Cardiff, accidents have occurred.

The electric light is being extended in London at the rate of over 5,000 lamps per week. There is not a town in the United Kingdom of any size or consequence which has not taken the subject into serious consideration. Taunton, Brighton, Barnet, Northampton, Leamington, Bath, Bacup, Barnsley, Fareham, Lynton, Lynmouth, Okehampton, Woking, Weybridge, Chelmsford, Eastbourne, Galway, Sheffield, Blackpool, Greenock, Newcastle-on-Tyne, Bourne-

mouth, Southampton, Bradford, St. Austeli, Hastings, Cardiff, Exeter, Edinburgh, and Kes wick are lighted by electricity. The corporations are doing the work themselves in Bacup, Blackpool, Barnsley, Bristol, Dublin, Greenock, Glasgow, Bradford, Nottingham, Brighton, St. Pancras, Manchester, and Hull. From eighty to one hundred other towns have secured provisional orders and are now considering how best to carry out the powers thus afforded them.

I observe Mr. Savona said: "We have not heard of a single municipality in England that has undertaken itself the supply of electricity." I am sorry his information on this point is not accurate, as the above list will show.

It is beyond the stage of speculation or experiment. It is now a confirmed industry, and perhaps the most remarkable fact connected with it is that in no case has it apparently injured the gas interest. The use of gas for heating and power purposes increases as its use for illuminating purposes diminishes, while the introduction of the pure and brilliant electric light creates an appetite for more and better light.

Mr. Savona, in his remarks in the council of government of Malta, has also referred to my capital estimate of £40,000, but he objects to the absence of a detailed estimate. I scarcely think, in a preliminary report of this character, that details are necessary. They could not be checked. There is no difficulty in giving them, but I think in giving the actual cost of the installations in Bradford, St. Pancras, and Brighton I have answered any suspicion that may exist as to my estimate being too low. I am too much used to estimates to make a mistake, and can not afford to risk my reputation by being too careless. I submit as an appendix a more detailed estimate. Malta, owing to its magnificent sewers, is a very cheap place to serve with mains and conductors.

As regards the cost of administration and distribution, this is included in my estimate of working expenses. The cost of 15*s.* per lamp fully covers this. I contemplate the appointment of an English electrical engineer of experience to take charge of the whole installation and its future management and a mechanical engineer to take charge of the engines. There will be no difficulty in finding the proper men.

I submit also a return compiled from the latest return showing the condition of private lighting by private companies in London on June 30, 1891:

Name of company.	Stations.	Indicated horse power of engines.	No. of 8-candle-power lamps supplied.	Capital.
London Electric Supply Corporation (limited).	Deptford and transformer stations.	4,500	27,000	£1,250,000
Metropolitan Electric Supply Company (limited).	Whitehall	850	62,000	500,000
	Sardinia street, W. C.	3,000		
	Rathbone Place	1,200		
	Manchester Square, W.	2,000		
House-to-House Electric Supply Company (limited).	West Brompton	600	16,144	350,000
Westminster Electric Supply Company (limited).	Millbank street, Westminster	1,120	36,000	300,000
	Eccleston Place	760		
	Davies street, W.	1,160		
Kensington and Knightsbridge Electric Supply Company (limited).	Kensington Court, W.	1,100	32,008	200,000
	Chapel Place, Knightsbridge	480		
Chelsea Electric Supply Company.	Draycott Place, Sloane Square, and three distributing stations.	560	23,500	100,000
St. James and Pall Mall Electric Supply Company (limited).	Mason's Yard, St. James	2,000	30,000	150,000
Notting Hill Electric Supply Company (limited).	High street, Notting Hill	700	(*)	100,000

* Lighting commenced only on May 30 last.

I would call special attention to the ratio between the number of lamps fitted and the capital embarked.

ESTIMATED COST OF INSTALLATION.

[Power required=600 indicated horse power.]

Buildings:	
General stations and substations	£3,000
Tanks	400
Foundations	400
Machinery:	
Boilers	2,400
Engines	3,000
Dynamos	3,000
Steam pipes, pumps, and fittings	800
Switches and central station apparatus	500
Transformers and meters	2,500
Mains:	
Charging mains	1,800
Distributing mains	11,400
Service leads and boxes	1,800
Sundries and incidental charges	3,000
Allowed for working capital	6,000
Total	40,000

The reasons in favor of the Maltese government carrying out the work themselves are incontestable.

I have, etc.,

W. H. PREECE.

ELECTRIC LIGHTING IN LONDON.

[Inclosure 2 in Consul Worthington's report.—From the London Daily Graphic of December 3, 1891.]

PAROCHIAL ENTERPRISE.

St. Pancras is one of the best governed divisions in the metropolis; it will shortly be the best lighted. As was reported in the Daily Graphic yesterday, the vestry has now obtained a loan from the county council for carrying out electric lighting in its district on a term of forty-two years—as long, in fact, as the provisional order granted to the vestry is in force. This was not the first intention of the county council, which wished to limit the repayments to periods similar to those allowed for money lent for street paving, etc.—the life of the original plant, in fact. But it was pointed out by Mr. Alderman Eccleston Gibb, the well-known vestry clerk of St. Pancras, that an electric plant must always be kept in the best order, and that its life would practically cover the whole forty-two years and be good then, whereas street paving is worn out in the seven years allowed for repayment. This view has prevailed, and the hands of the vestry are now free to go on with a very valuable improvement without a large initial cost. The vestry deserves honor as being the first in London, and possibly in England, to take up this duty of supplying electricity to the ratepayers.

THE ST. PANCRAS DISTRICT.

Mr. Alderman Gibb's opinions on the benefit to the district of the step the vestry has taken verge on the enthusiastic. The parish is large and full of business establishments. The work carried on in its vestry hall is unequaled in variety by any like institution in England. When stepping over its doorstep with Mr. Gibb, writes our representative, I caught sight of

rice grains scattered over the pavement in front. I looked inquiringly at Mr. Gibb. "Yes, there has been a wedding; in fact, weddings are everyday events with us. We look after people from the cradle to the grave. We register their births, we marry them, and give them orders for burial, and in addition carry on all the duties of a corporation, street paving, sanitary arrangements, street lighting."

"And now you are going to supply them with electric light?"

"Not only electric light, but motive power. We shall drive their sewing and washing machines for them."

THE ELECTRIC STATION.

While we were thus talking we had arrived at Stanhope street, where the first electric supply center has been built. It is like a private house of good class which has found its way into a back street. The front part is occupied by committee rooms, offices, etc., and the generating plant is in the rear. Before we went among the dynamos and batteries we handed over our watches to Mr. Barron, the engineer, who accompanied us, as the current was strong and might throw the watches out of regular habits. Standing by the switch board, Mr. Gibb commented on the intelligent appearance of the workmen.

"They seem men," he said, "who have an interest and pride in their work, unlike most other classes of workmen, and I have seen them stand and admire this switch board as an artist would stand and admire a painting."

We were now in the engine room, lighted—for the day was thick with fog—by a beautifully steady arc lamp, such as is to be used for street-lighting in the parish. Passing through it, bearing carefully in mind the injunction not to touch the machinery, we went into the yard at the back. The most remarkable object here was a tall chimney, with attachments on each side which made it look like some winged prehistoric monster, a pterodactyl on the point of rising in the air. These wings are the result of a suggestion of Prof. Robinson, electrical engineer to the vestry, and are condensers, the waste steam from the boilers passing through them and being again utilized—a great saving in the cost of water supply. That the appearance of the chimney has offended the artistic sense of some of the vestrymen shows that civilization is making itself felt.

THE INSTALLATION.

As to the installation generally, I can not do better than quote Mr. Gibb's own description: The center serves the southwest part of the parish. The continuous current has been adopted, and the electro-motive force fixed at 110 volts, to suit incandescent lamps. The mains are laid on what is known as the three-wire system (though Mr. Gibb protests against the use of the word system, which, he thinks, was invented by contractors). By it the current is sent from the central station at 220 volts along the two outside wires, while the third wire is kept at an intermediate potential, differing from that of either of the outer wires by 110 volts. The lamps are in electrical contact with either of the outer wires, and also with the third wire. Half the lamps are connected to one outside wire and half to the other, and in the event of the demand being greater on one side than the other it is met by a supply from the station along the third wire. This enables currents to be supplied at 220 volts for the purposes of motive power and arc lights, in addition to the supply at 110 volts for incandescent lighting. The central station can now supply 10,000 lamps of 16-candle power at once, and it is being extended so as to supply 26,000 lamps. It can also supply ninety 10-ampere arc lights at high-tension current. There are nine low-tension and two high-tension dynamos, one of each serving as a standby, and these are driven by triple-expansion condensing engines. Six sets of batteries, or accumulators, form a reserve for use at periods of minimum demand, when the dynamos need not be working. A second reserve has been formed under the street, just at the base of the Cobden statue, though I believe this is intended to give consumers at the extreme points of the circuit a supply of full voltage. The board of trade has fixed the price at not more than 6*d*. per unit, corresponding, according to the notice to ratepayers issued by the vestry, to about one-third of 1 penny per 16-candle-power lamp per hour.

LIGHT AND POWER.

Sitting in the engineer's room, he told me how the parish came to take up electricity. That the vestry did well in securing a provisional order granting them the necessary powers everybody is now convinced. "Already," said Mr. Gibb, "though the works were only started on the 9th of November, we are supplying 3,000 lights and have orders to supply 6,000 as soon as the consumers get their fittings in. Quite a trade has sprung up in the supply of those fittings in the parish. Then some of the large firms in Tottenham Court Road are beginning to think that it will, perhaps, be as cheap to get their light from us as to supply it themselves, or, at any rate, to extend their present plant to meet new requirements, and we are going to let them have some thousands of lights."

"You are supplying private houses?"

"Yes, and we hope to supply more. I know one house where there are lamps everywhere, and the owner can light up any corner he pleases at any moment. He has lamps over his bed, over his dressing table, wherever he thinks he might want one. The initial cost is the main thing. After that you are only charged for what current you use, just as in the case of gas."

"One great question is, will it pay?"

"It will pay us well when we are running full power. We charge the consumer 6*d.* per board of trade unit. It would have paid us at that even if we were only running full power at the close of the two years allowed us for installation; but we will be using all our current long before then. As a matter of fact, we are looking out for fresh stations to supply other portions of the parish."

"You are also to supply motive power. Can that be done to the smaller class of customers?"

"We will supply it to a sewing machine or a washing machine. No difference will be made between the charges for the largest consumer and the smallest, and there are indications that this will be an advantage which will be eagerly seized on by manufacturers in a small way. We will even blow the bellows of the organs in churches and chapels."

This reminded one of us of a story of a clergyman who would not have the power applied to the bellows of his organ for fear it should stop. The clergyman's remarks were repeated to an irreverent parishoner, who inquired with wistful eagerness: "Could it not be applied to the sermon?" Churches have fought shy of the light so far. Some enterprising chapel-goers in the parish have, however, already had it installed in their place of worship. The street lighting, Mr. Gibb told me, is to be done by arc lamps fixed on a 25-foot cast-iron standard placed in the center of the street at points 40 yards apart.

"An advantage arising from that has been," Mr. Gibb added, "that we have been enabled to make every one of these lamp bases a shelter, and the police will also be better able to regulate the traffic in such streets as Tottenham Court Road, which is always crowded."

NEW BRUNSWICK-AMERICAN TRADE.

REPORT BY CONSUL SAMPSON, OF ST. JOHN.

GENERAL EXPORTS.

The total exports from the port of St. John to all countries during the year ended September 30, 1891, amounted to $3,721,362. Of this amount $2,344,472, or about 63 per cent, went to the United States.

EXPORTS TO THE UNITED STATES.

Of the exports to the United States $1,335,692 was the produce or manufacture of Canada. The balance comprises salt imported from Great

Britain and afterwards exported to the United States; lumber cut in the State of Maine, floated down the St. John River, manufactured at its mouth, and shipped from this port; molasses imported from the West Indies and shipped to the United States, and a few other articles.

The following table shows the value of the exports to the United States, distinguishing the produce of Canada from the foreign produce:

Table showing exports to the United States from St. John for year ended September 30, 1891.

Aritcles.	Quantity.	Value.
Canadian.		
Ore, manganese.....tons...	385	$8,555
Coal, bituminous.....do.....	1,757	5,242
Plumbago.....cwts...	800	213
Codfish, dry salted.....do.....	13,289	37,496
Mackerel:		
Fresh.....pounds...	37,910	1,591
Pickled.....barrels...	1,020	5,872
Herrings:		
Pickled.....do.....	11,009	40,370
Smoked.....pounds...	714,987	15,535
Oysters, fresh.....barrels...	10	35
Lobsters:		
Fresh.....do.....	1,367	4,526
Canned.....pounds...	126,340	13,031
Salmon, fresh.....do.....	98,387	12,711
Fish, all other fresh.....	.....	14,134
Fish oil.....gallons...	529	74
Bark for tanning.....cords...	9,162	38,406
Firewood.....do.....	28,936	49,167
Knees and futtocks.....pieces...	3,492	3,127
Deals, spruce.....	.....	516,927
Laths and pickets.....M...	39,780	83,667
Planks and boards.....do.....	12,595	104,421
Scantling.....do.....	1,197	9,479
Staves and headings.....do.....	75	375
Shingles.....do.....	7,739	17,239
Shooks.....	.....	296
Sleepers, railroad.....number...	5,100	838
Piling.....	.....	57,049
Horses.....number...	240	40,104
Sheep.....do.....	4,809	19,030
Eggs.....dozens...	25,829	3,285
Hides and skins.....	.....	9,832
Meat, all kinds.....pounds...	94,212	4,822
Apples, green.....barrels...	4,042	10,355
Berries, all kinds.....	.....	21,588
Wheat flour.....barrels...	4	19
Meal, buckwheat.....do.....	20	67
Potatoes.....bushels...	132,077	66,044
Other products, agricultural.....	.....	800
Books.....	.....	560
Clothing.....	.....	54
Cotton waste.....pounds...	19,023	1,208
Gypsum, ground.....	.....	209
Settlers' effects.....	.....	25,746
Iron, manufactures of.....	.....	269
Junk and oakum.....cwts...	6,843	7,590
Harness and saddlery.....	.....	38
Lime.....	.....	64,020
Stone and granite.....	.....	11,302

Table showing exports to the United States from St. John, etc.—Continued.

Articles.	Quantity.	Value.
Canadian—Continued.		
Empty barrels.....number...	611	$394
Other articles.....	.....	8,080
Total.....	.....	1,335,692
Foreign.		
Salt.....bushels...	39,480	10,186
Deals, spruce.....	.....	393,145
Laths and pickets.....M...	52,779	150,325
Planks and boards.....do.....	26,305	284,249
Scantling.....do.....	1,369	10,963
Staves and headings.....do.....	239	1,526
Shingles.....do.....	53,009	113,316
Shooks.....	.....	5,824
Hides and skins.....	.....	5,545
Meat of all kinds.....pounds...	16,200	687
Other products of agriculture.....	.....	695
Books.....	.....	124
Iron, manufactures of.....	.....	395
Molasses.....gallons...	22,865	3,368
Empty barrels.....number...	15,791	11,934
Other articles.....	.....	16,508
Total.....	.....	1,008,780

GENERAL IMPORTS.

The total value of goods imported from all countries and entered during the year ended September 30, 1891, was $3,895,746, of which $1,807,580, or over 46 per cent, came from the United States. The entire duties collected amounted to $882,784, being an average rate on the whole of 23 per cent.

IMPORTS FROM THE UNITED STATES.

The total value of free goods imported during the year ended September 30, 1891, was $1,292,435, leaving a total of $2,623,311 of dutiable goods, which paid duty at an average rate of nearly 34 per cent. Of the $1,807,580 worth of goods imported from the United States during the year above stated $678,478 was imported duty free and consisted principally of materials used in manufacturing purposes.

The following table, compiled from official sources, gives the quantity and value of each article imported from the United States:

Table showing the imports from the United States for the year ended September 30, 1891.

Articles.	Quantity.	Value.
Dutiable imports.		
Ale and beer.....gallons...	1,256	$615
Animals (horses).....number...	14	11,724
Baking powder.....pounds...	18,571	5,303
Belts and trusses.....	.....	422
Bells for churches.....	.....	513
Bird cages.....	.....	334
Blacking, shoe.....	.....	2,930

Table showing the imports from the United States, etc.—Continued.

Articles.	Quantity.	Value.
Dutiable imports—Continued.		
Blueing.....pounds...	1,706	$586
Books, printed.....		29,047
Blank notes and other printed matter.....		4,572
Boot and shoe laces.....		376
Braces or suspenders.....		285
Brass goods.....		11,917
Breadstuffs, all kinds.....		155,325
Brushes.....		1,288
Buttons.....		2,350
Candles, paraffin and sperm.....		271
Carriages, all kinds.....		6,187
Cases (jewel, etc.).....		375
Cement.....barrels...	578	602
Chalk.....		267
Clocks.....		757
Coal, bituminous.....tons...	854	2,269
Clothes wringers.....number..	175	566
Coal tar and pitch.....barrels...	526	1,388
Cocoanuts.....number...	32,845	994
Cocoa preparations.....		466
Coffee.....pounds...	14,592	3,366
Collars.....		897
Copper nails and manufactures of copper.....		4,821
Cordage, all kinds.....pounds...	211,075	20,238
Corks and cork wood.....		607
Cottons, all kinds.....		27,150
Curtains, all kinds.....		2,910
Dressing, harness.....		34
Acids, sulphurous and other.....		149
Drugs, all kinds.....		19,364
Earthenware goods.....		3,479
Electric-light carbons.....		1,469
Emery wheels.....		597
Fancy goods.....		9,343
Fiber ware.....		1,097
Fish, all kinds.....		5,622
Flax (linen goods).....		2,253
Fruit:		
Dried (all kinds).....pounds...	1,084,230	57,270
Green.....		40,209
Furs and skins.....		149
Glass and glassware.....		16,332
Gloves and mittens.....		302
Gold laces, etc.....		3,276
Electro-plated ware.....		6,866
Plated cutlery.....		59
Grease, axle.....		246
Gunpowder.....pounds...	36,975	4,871
Gutta-percha goods.....		19,203
Hair, curled.....pounds...	4,277	1,111
Hats, all kinds.....		23,729
Honey.....pounds...	2,892	334
Hops.....do.....	8,507	3,583
Horse clothing.....		371
Ink.....		3,257
Iron and manufactures of iron.....		141,808
Jellies and jams.....pounds...	1,831	259
Jewelry.....		3,172
Lead and manufactures of.....		1,190
Leather, boots, and shoes.....		13,325

Table showing the imports from the United States, etc.—Continued.

Articles.	Quantity.	Value.
Dutiable imports—Continued.		
Harness		$1,196
Lime juice, gallons	483	429
Marble and manufactures of		2,787
Mats and rugs		1,185
Metal manufactures		6,728
Mineral substances		2,358
Mucilage		231
Musical instruments		12,604
Mustard, ground, pounds	7,572	668
Oil:		
Kerosene, gallons	699,106	53,037
All other		45,282
Optical instruments		1,226
Oilcloth		677
Packages		1,813
Paintings		1,304
Paints and colors		6,320
Paper bags		1,108
Playing cards		161
Papers and paper hangings		28,216
Pencils, lead		1,766
Perfumery		862
Trees, apple and others, number	43,260	3,522
Pocketbooks		1,694
Post-office packages		12,654
Printing presses, number	3	3,151
Lard, pounds	55,211	3,702
Beef in barrels, do	667,800	27,748
Pork in barrels, do	800,000	46,112
Other meats, do	219,200	15,130
Salt in bags		1,254
Sandpaper		865
Sauces		567
Seeds and bulbs		14,390
Silk goods		6,797
Slate, all kinds		1,460
Soap, all kinds		5,480
Spices		31775
Perfumes, alcoholic		1,116
Sponges		591
Starch, pounds	39,396	2,416
Stone and granite		1,530
Syrups, pounds	79,376	1,836
Sugar candy, do	16,646	1,957
Tea, black, do	40,598	8,738
Telephones		20,624
Tinware		2,007
Snuff, pounds	2,657	516
Tobacco pipes		254
Turpentine, spirits of, gallons	16,277	7,488
Umbrellas		169
Unenumerated articles		3,354
Varnishes, gallons	756	1,774
Sweet potatoes		9,100
Watches and watch cases		1,751
Wax		591
Elastic webbing		718
Whips		501
Wooden barrels		27,646
Furniture, house		8,189

Table showing the imports from the United States, etc —Continued.

Articles.	Quantity.	Value.
Dutiable imports—Continued.		
Hubs and spokes		$892
Other manufactures of wood		15,868
Felt, pressed		811
Zinc and manufactures of		498
Other articles		3,970
Total dutiable		1,129,102
Free imports.		
Coal, anthracite ..... tons	46,434	159,546
Emery		1,058
Gravel and sand ..... tons	1,062	1,354
Mineral water ..... gallons	2,200	361
Silex ..... cwts	978	379
Fish skins for making glue		3,092
Lumber (oak, mahogany, etc.) ..... thousand feet	3,364	79,638
Horses ..... number	2	3,500
Cattle ..... do	18	1,500
Bristles ..... pounds	4,921	3,149
Furs, not dressed		384
Hair, all kinds ..... pounds	3,809	1,059
Hides, raw		27,786
Wool ..... pounds	6,434	1,398
Broom corn ..... do		9,982
Fiber, vegetable		3,452
Fruit, bananas and pines ..... bunches	31,109	22,440
Hemp, undressed ..... cwts	186	1,081
Tobacco, leaf ..... pounds	40,882	10,967
Bells for churches		188
Bolting cloth		206
Fire brick		91
Chronometers for ships		885
Cotton waste ..... pounds	43,120	2,830
Cotton wool ..... do	2,312,895	215,728
Dyestuffs		7,400
Chloride of lime ..... pounds	8,714	223
Gums, amber, etc		3,300
Soda, nitrate of ..... pounds	86,813	1,371
Nets and seines		6,981
Junk and oakum		4,988
Steel for saws and skates ..... cwts	1,044	3,986
Oil cake and meal ..... do	2,629	2,292
Pitch and tar ..... barrels	943	2,048
Resin ..... do	894	3,996
Tree nails ..... M	289	2,346
Settlers' effects		21,328
Miscellaneous articles		66,165
Total free goods		678,478
Grand total		1,807,580

LUMBER.

Lumber naturally takes the first place with respect to the trade of this port. The lumber shipments to the United States for the year ended September 30, 1891, have increased considerably over those of the year before, notwithstanding continuously depressed markets and a serious strike of mill operatives here that continued for eleven weeks. The shipments of pro-

vincial lumber, piling, and cord wood for the year ended September 30, 1891, as compared with the year before, may be tabulated as follows:

Description.	1890.	1891.
Long lumber	$128,875.81	$143,085.97
Short lumber	107,670.60	125,410.37
Piling	61,960.61	54,602.56
Cord wood	32,380.50	49,765.50
Total	330,887.52	372,864.40

Of lumber cut in the State of Maine, floated down the St. John River, manufactured at its mouth, and shipped to the United States,* the shipments for the same periods as above also show an increase, as follows:

Year.	Long.	Short.
	Feet.	*Pieces.*
1890	75,783,417	117,338,528
1891	79,134,394	118,118,715

The deal shipments from this port to Great Britain will be about 130,000,000 feet, against 137,000,000 feet last year; birch, 6,000 tons, against 5,082 tons last year; pine, 2,200 tons, against 1,740 tons last year.

The South American lumber trade, which was beginning to show some development, received a complete setback from troubles in the Argentine Republic.

LIME.

Lime, until about one year ago, was, next to lumber, the chief export from this port to the United States. The decrease in the export of this product for the year ended September 30, 1891, as compared with the year before, is very marked, as will be seen by the following: In 1890, $157,669.60; in 1891, $75,294.90.

Over one-half of the twenty-five limekilns have been closed within the year. While the decrease in the manufacture and shipment may be attributed in a large degree to our new tariff law, it is by no means wholly so, as the manufacturers have been willing to ship at market prices so long as there was a demand for the product in New York and Boston, the chief ports for shipments from this city.

* These shipments are regulated by the following sections of the tariff of the United States.

"SECTION 15. That the produce of the forests of the State of Maine upon the St. John River and its tributaries, owned by American citizens, and sawed or hewed in the province of New Brunswick by American citizens, the same being unmanufactured in whole or in part, which is now admitted into the ports of the United States free of duty, shall continue to be so admitted under such regulations as the Secretary of the Treasury shall, from time to time, prescribe.

"SEC. 16. That the produce of the forests of the State of Maine upon the St. Croix River and its tributaries owned by American citizens, and sawed in the province of New Brunswick by American citizens, the same being unmanufactured in whole or in part, shall be admitted into the ports of the United States free of duty, under such regulations as the Secretary of the Treasury shall, from time to time, prescribe."

MANUFACTURES.

The manufacturing industries of this city have been only fairly prosperous during the year. Three new establishments, employing a large number of people, have been erected—a foundry and machine shop, a wire and nail factory, and boiler works.

AGRICULTURE.

The farmers of this consular district have had a more successful year all round than the one which preceded it. The winter was not severe, and stock came out in good condition in the spring. The summer was very favorable to vegetation, and the yield of various products was prolific, except in the case of potatoes, which rotted in some localities to a considerable degree. The hay crop was also slightly below the average, but the grain crop more than balanced the deficiency.

SHIPBUILDING.

This industry at one time rivaled that of lumber; but as the days of wooden ships have gone by, so the building of such vessels in this port is nearly extinct. A large local capital which, in other days, would have gone into wooden ships constructed in St. John's harbor is being (and has been for several years) invested in iron ships built in Great Britain.

AMERICAN SHIPPING.

For the year the total number of clearances of American vessels from this port amounts to 450, as follows:

Brigs	9
Barks	1
Schooners	219
Steamers	221
Total	450

Of these 9 vessels cleared for foreign ports and 441 for ports in the United States. The aggregate tonnage of these clearances amounted to 291,409 tons; aggregate value of their cargoes, $1,206,426.46, or about 31 per cent of the total exports. The number of vessels engaged in trade with the United States was as follows: Brigs, 7; schooners, 213; steamers, 221—in all representing a tonnage of 288,131 tons. The value of the cargoes was $1,167,990.46. The tonnage of the vessels clearing for foreign ports was 3,278 tons; value of cargoes, $38,436.

The increased number of clearances of steamers for the year, as compared with last year, is in part accounted for by reason of the steamers of the International Steamship Company making daily trips (Sundays excepted) during the summer months just past, whereas last year only three trips a week were made.

M. D. SAMPSON,
Consul.

UNITED STATES CONSULATE,
St. John, December 15, 1891.

FISHERY LEGISLATION IN GERMANY.

REPORT BY COMMERCIAL AGENT WASHBURN, OF MAGDEBURG.

INTRODUCTION.

The regulations and restrictions governing the shooting of game and the catching of fish are among the things sure to attract the attention of the American whose pursuit of business, study, or pleasure leads him to reside for any length of time on the Continent. The legislation of the Old World and the New in this respect presents marked contrasts. Perhaps no better instance of the continental idea could be found than here in Germany. The German laws are not uniform, it is true; each state, through its Landtag, prescribes its own regulations, but in all states these regulations closely resemble each other. They are all framed on the same general lines and to attain the same ends, viz, protection from lawless depredation and to provide a source of imperial revenue—one or both. For purposes of illustration in this brief review, the law of Prussia will be especially quoted.

THE LICENSE REQUIREMENT.

A leading feature of the European system is the license requirement. Each sportsman must provide himself with a legal permission, technically known as the *Jagdpass* and *Fisherei Erlaubnisschein.* The latter (fishing license) is issued for all open waters. Closed waters, within the meaning of the law, are: (1) All artificial ponds, lakes, etc., whether the same be connected with natural bodies of water or not; (2) all bodies of water which lack suitable connections with other waters, thus restricting the free movement of the fish.

Licenses are not transferable; they must specify the body or bodies of water for which they are granted, and are only good for a certain period (not to exceed three years). They are issued upon application by the owner or lessee, or, in the case of an incorporated society, by the director. When issued by an unofficial person, the certificate must be duly attested before a local police magistrate. No charge is usually made. Societies are, however, allowed to collect a small fee, not over 1 mark. These certificates must always be shown upon the demand of the inspector or of the police.

How rigid the license requirements are may be seen from the fact that even the members of incorporated societies possessing property rights in the fishing territory are obliged to give notice of their intention to fish to the general director and receive a card of permission. The only persons exempted from the operation of the law in this respect are private owners and lessees, and also certain employés. Those who control the latter are always responsible for any infringement of the law of which they may be guilty.

Another feature to be noted in this connection is that the certificates may contain conditions regarding tackle, the number of boats to be allowed,

peculiar and distinguishing marks, and the like. The number of permissions granted may be limited in the discretion of the district boards of inspection.

Still another subject for legislation is the specification of the minimum length at which fish may be caught. To illustrate, in the province of Saxony, belonging to Prussia, the fish below cited, to be legally taken, must measure as follows: Sturgeon, 100 centimeters; salmon, 50 centimeters; eel, 35 centimeters; carp and pike, 28 centimeters; tench and trout, 20 centimeters; perch and flounder, 15 centimeters. The minister of agriculture, domain, and forests is further clothed with discretionary powers to increase the length in some specified cases.

A graduated scale of fines is imposed to give force and authority to the law. The fines range from 30 to 150 marks, including imprisonment. They call for no special comment, though it may be interesting to note that all "foreigners who fish in waters within the jurisdiction of the German coast without authority will be punished with a fine of 600 marks or with imprisonment up to six months."

STATE SUPERVISION OF LARGE STREAMS.

The foregoing remarks, so far as they relate to the issuing of licenses by private parties or by incorporated companies, must be understood only in connection with bodies of water of small extent. The country is interspersed with such streams and lakes well stocked with fish, but too insignificant in size for state jurisdiction. Whenever waters of this class flow through the domains of a number of proprietors, the before-mentioned incorporated companies are formed to secure proper protection and uniform management. The boards of control in such cases consist of directors chosen by those entitled to vote according to the act of incorporation. All questions of dispute are referred to the district judiciary for settlement.

No such minute system of supervision is, of course, possible with the large rivers and their tributaries. The fishing privileges in these streams are controlled by the provinces and districts interested. The general rule is to allow all citizens to fish along the banks without permission, but the rights of fishing in midstream are leased to individual persons or guilds for a term of years.

THE RHINE SALMON INDUSTRY.

The catching of salmon is a noteworthy industry of the Rhine provinces, and is regulated by an international agreement entered into in 1885 by Germany, Holland, and Switzerland. The treaty is binding for ten years and further from year to year, until twelve months' notice of its expiration be given by one of the contracting parties. The jurisdiction includes the waters of the Rhine and its tributaries from Schaffhausen Falls, in Switzerland, downward to the sea. Some of the leading provisions may be summed up as follows:

No dams, nets, or other obstructions for catching the fish may be erected for more than half the width of the river at low water, measured in the

shortest line from shore to shore; further, the nets must not be over 2.5 meters in breadth, and must be stationed from each other at a distance of at least equal to double the length of the largest net employed. The fishing season is closed in Holland from the 16th of August to the 15th of October, inclusive; from the Dutch-German boundary upwards, from the 27th of August to the 26th of October, inclusive. During this period each government pledges itself to prevent salmon-fishing under the pretext of catching other fish. Further, in the Rhine tributaries, where the breeding districts are found, and in the upper Rhine itself above Mannheim salmon-fishing is only allowed during a period of at least six weeks some time between the 15th of October and the 31st of December by special permission of the authorities, and this special grant is only given on condition that the roe and milt of of the salmon shall be assured to the various artificial breeding ponds and establishments. Measures are taken to protect and promote salmon propagation as much as possible. It is stipulated that all the natural breeding spots in the tributaries shall be kept free and open to the fish ascending the river.

It is left to each individual government to settle for itself the lesser details (such as minimum length, tax, fines, etc.), and it is especially agreed that nothing in the compact shall be construed to prevent any government, in its own judgment, imposing severer regulations. Finally, a supervising commission is appointed by each nation, empowered to convene in international conference from time to time.

Although the catch of salmon in Germany is annually very considerable, and salmon, like trout, is one of the delicacies of the table, the canning and preservation of this fish has not assumed great proportions. It is carried on to some extent, but it has none of the prominence of the industry on our own Pacific coast.

NORTH SEA FISHERIES.

The North Sea fisheries should be mentioned. Outside of the 3-mile limit they are controlled by international agreement of Germany, Belgium, Denmark, France, the Netherlands, and Great Britain. The treaty prescribes that rules shall be adopted whereby vessels of the nations who are parties to the compact may be easily recognized, and provides a code of regulations looking to the avoidance, as much as possible, of quarrels regarding territory and nets. Each vessel must be registered and numbered. War cruisers are stationed by the different nations all along the fishing territory to secure their respective rights. An infraction of the treaty stipulations must be tried before a judge of the nation to which the accused belongs.

CONCLUSION.

The regulations governing the catching of fish greatly resemble those of the hunt. The *Fisherei Erlaubnisschein* must merely be substituted for the *Jagdpass*. Yet, as closely related as these two sports would seem to be at first sight, they present, in practical operation, lines of wide divergence. Viewed from the economic standpoint, they have little in common. The hunt has been for ages the pastime and sport of the privileged and prosper-

ous. It is a national institution, and the assembling of a hunting party is the signal for feasting and good fellowship. The income to the State from this source is no small feature. On the other hand, the German, unlike the American and Englishman, has never found much in fishing to amuse him; it is not a popular sport. Its pursuit is most often dictated by necessity, not by pleasure. In many districts fishing is the sole means of support of a population so impoverished that they can ill afford to pay even slight taxes to the State. The revenue being therefore insignificant, the question of strict State police supervision is to this extent secondary.

The present general law, passed in 1874, especially the license feature, has been the subject of lively criticism. Its opponents claim that, as it now stands, it is clumsy and antiquated, besides being irksome not only to the public, but to the magistrates as well. The greater part of the fishermen, being professional, naturally have their abodes in places most convenient for their trade. Consequently there is little reason for them to fish in districts where they are personally unknown, and so, perhaps, less amenable to police regulations. Such annoyances as hedge in and protect the hunt, however disagreeable personally to the sportsman, are necessary guards of the continental system, parts of which might perhaps be copied with profit by us. It is questionable, however, whether we could apply with any advantage the leading features of the German fish laws. Our own statutes in most States are already admirable and probably better suited to our conditions.

ALBERT H. WASHBURN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Magdeburg, December 30, 1891.

PARAGUAY.

SITUATION, RESOURCES, PRODUCTS, GOVERNMENT, PEOPLE, COMMERCE, ETC.

REPORT BY CONSUL SHAW, OF ASUNCION.

SITUATION AND EXTENT.

This beautiful and ill-fated country is in the heart of the continent, the capital being 1,750 miles from the mouth of the River Plate, the only outlet connecting it with the exterior world and civilization. The prolonged war of 1865–'69 almost completely destroyed the people, and the country has never recovered.

The Republic is bounded on the south and east by the River Paraná, which divides it from the Argentine province of Corrientes and the late Empire of Brazil; on the north from Brazil by the twenty-first parallel of south latitude, and on the west by the rivers Paraguay and Pilcomayo, which separate it from the Argentine Republic and, at the extreme north, from Bolivia.

Paraguay lies between latitude 21° and 27° south and longitude 56° and 61° west. Its area is about 88,700 square miles, or about the size of Great Britain. It is only accessible at present from the outer world by the River Paraná, which is navigable for large steamers as far as Corrientes, the capital of the Argentine province of that name. Above Corrientes the river, owing to deposits of mud brought down by the current, does not contain more than 7 feet of water in the channel. Vessels with that draft can ascend the Paraguay River for more than 1,000 miles above the city of Asuncion, and also some of the tributaries of the Paraguay, especially the Tebiquary. The Alto Paraná has a strong current, but it is navigable for the greater portion of its course.

PHYSICAL CHARACTER.

The cordillera of Amambahi, a chain of heights, bisects the country, the eastern half being the portion chiefly uninhabited, the various towns and villages lying between this range and the River Paraguay. The yerbales, or yerba forests, are principally found along the base of the Amambahi, and on the opposite side of this ridge are the sources of five rivers which fall into the Alto Paraná. The Tebiquary is the most important of seven rivers tributary to the River Paraguay. The southeastern portion of the country is the region of the low swamp lands, the abode of herons, storks, and snakes. In the central part of the country are the heights of the cordillera of Canguazú. Further south the cordillera of Villa Rica extends from the head of the basin of the Tebiquary to the bluffs of the River Paraná at Encarnacion. In latitude 24° an extensive branch of the main stem trends to the east, and, crossing the Paraná, forms the grand cataract of the Guayrá.

FAUNA.

Tigers, pumas, wild boars, monkeys, apes, wildcats, and deer are found in large numbers in the woods; also the armadillo and ant-eater. The lakes and rivers swarm with crocodiles and lizards and many varieties of the piscatorial tribe which are very palatable. Azara counts four hundred and forty-eight different varieties of birds. Bees and cochineal are very common; and last, but not least, is the locust, which becomes a pest every seventeen years. This is the return year (1891), and already parts of the country are black with them.

FLORA.

The flora is similar to that of Uruguay and the Argentine Republic. Plants and shrubs which are used for medicinal purposes are found in large numbers.

MINERALS.

The mineral resources have never been sufficiently ascertained or developed. Iron and copper have been found, but in small quantities, although Lopez, during the war, employed 100 men in the iron works of Ibicuy. Manganese, it is claimed, is found in large quantities, but as yet nothing has been done to develop the industry. It is also claimed by some that

gold exists, but it is not authentic. There are large quarries of fine building and paving stone, but no marble. Clay exists in enormous quantities, and is of an excellent quality for brick and tiles. There are no traces of either coal or salt, and the lack of the last-mentioned article caused a great deal of disease and suffering in the late war.

WOOD AND TIMBER.

Paraguay is one of the richest countries in the world as regards its woods. Du Graty enumerates 51 different kinds of timber especially suitable for building purposes, and others claim even as high as 75; 69 medicinal, 43 ornamental, 15 dyeing, 38 fruit, and 8 fibrous trees and plants. A large number of the foregoing trees will, when thrown into the water, sink. The average gravity is 70 pounds per foot. In transporting these woods to market they are floated, supported by cedar rafts. Dyewoods of red, yellow, violet, and blue are found in large numbers; also excellent barks for tanning. Resinous trees and shrubs for varnishing, wild vanilla, and gum trees grow in great numbers. The quebracho and campay are shipped abroad for tanning and coloring.

CHARACTER AND EXTENT OF LANDS.

By the survey of 1870 the lands were divided as follows: Public, 73,340 square miles; mountains and forest, 27,000 square miles; private, 15,360 square miles; yerbales, 5,040 square miles; arable, 42,600 square miles; total, 88,700 square miles. Since that time no resurvey has been made.

RIVERS AND WATER COMMUNICATION.

The principal rivers of Paraguay are four in number, viz, the Paraná, Paraguay, Pilcomayo, and Tebiquary.

The Paraná.—This is a giant stream in volume, and rises in the mountains of Goyaz, Brazil, in latitude 16° 30′ south, and flows 2,043 miles until its junction with the Uruguay.

The Paraguay.—The Paraguay is the second in size. It rises in the seven lagoons of Brazil, in latitude 13° 30′ 5″ south and longitude 59° 2′ west, flowing southward through the Brazilian province of Matto Grosso into Paraguayan territory. Its length to its confluence with the Paraná is 1,800 miles. On its banks are situated the towns of San Salvador, Concepcion, Asuncion, Villa del Pilar, and Humaitá. It is the outlet of Paraguay.

The Pilcomayo.—This river rises in Bolivia, near the city of Chuquisaca, and traverses the Gran Chaco, and, after a course of 1,500 miles, flows into the Paraguay River near the town of Lambaré.

The Tebiquary.—This river rises in the yerbales or mate fields of Messiones, and, after flowing 400 miles, empties into the Paraguay near the town of Villa del Pilar.

All these rivers and their tributaries go to make the Rio de la Plata, the watershed of which covers an area of 1,500,000 square miles, next to the Amazon the largest in the world.

CLIMATE.

The climate is warm and dry, but healthy, and compares very favorably with the southern portion of Queensland. The hottest months are November, December, and January, when the medium temperature is 92°, but has been known to rise as high as 105° in January and drop to 40° in July. The average for the winter months, May and June, is 50°. The temperature is influenced by the north and south winds; from the north heat and dryness, and from the south storms and cold weather. The temperature at 6 a. m. averages 78.7° in January and 59.7° in July; at 3 p. m. in January, 96.4°, and in July, 70°. The average number of wet days in the year is 79; cloudy, 72; and clear, 214.

There are no epidemic diseases in Paraguay at the present time, but a year ago it was estimated that the number of deaths from smallpox alone was 10,000. Vaccination is now compulsory.

The following table showing the rainfall from the year 1877 to 1889, inclusive, with the exception of the years 1884 and 1887, is compiled from observations taken by Mr. Henry Mangels, who was the German consul here for many years:

Year.	January.	February.	March.	April.	May.	June.	July.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*
1877	38.8	3.3	127	249	68	14	94
1878	386	610	182	445	63	80	76
1879	215	32	232	105	192	144	79
1880	126	130	321	37	200	64	109
1881	190	161	214	209	175	94	99
1882	148	77	213	56	157	232	93
1883	46	127	115	74	155	51	15
1885	96.5	50.8	52.7	251	287.6	22.6	58.1
1886	112.9	124.1	184	187.2	48.1	90.7	43.3
1888	48.4	62.8	134.6	124.5	73.5	30.7	16
1889	223.2	170.9	233	185.6	175.6	77.8	120.7
Total	1,630.8	1,578.6	2,008.3	1,923.3	1,594.8	900.2	803.1
Average	148.3	143.5	182.6	174.8	145	81.8	73

Year.	August.	September.	October.	November.	December.	Average.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*
1877	48	158	133	253	262	†1,478.8
1878	145	101	185	201	139	*2,613
1879	37	29	193	105	221	*1,584
1880	131	49	168	158	81	*1,574
1881	39	81	200	128	78	*1,668
1882	12	37	147	77	208	†1,457
1883	5	167	99	202	89	†1,145
1885	75.5	192	41.5	85.3	184.7	†1,337.1
1886	28.8	82.3	153.9	155.7	63.8	†1,274.8
1888	106	163.7	204.1	101.6	140.3	†1,206.6
1889	15	31.5	231	157.1	200.4	*1,821.8
Total	642.3	1,092.3	1,755.5	1,563.7	1,667.2	17,160.1
Average	58.4	99.3	159.6	142.2	151.6	1,560

*Wet. †Dry.

The heaviest rainfall in one month during the eleven years was 610 millimeters, in February, 1878, and the least 5 millimeters, in August, 1883. Taking the rainfall of any one column, it will be seen that the greatest quantity fell under the March heading, 182.6 millimeters, and the least under the heading of August, 58.4 millimeters. The greatest yearly average was 156 millimeters, and the monthly 13 millimeters. The years or months that do not reach this mean are called dry, and those in excess wet; the dryest of the eleven years observed was 1883, with 1,145 millimeters, and 1878 the dampest, with nearly twice the amount, namely 2,613 millimeters. The dry season, which preceded the year 1878, ended with August, 1877, at which time the rainy season set in and maintained itself during the years 1878, 1879, 1880, and 1881; then followed a dry season, from 1882 until 1888. It appears that with 1889 a wet season has again set in. It is quite an extraordinary fact that during the eleven years observed there appears no month without rain.

The following table shows the comparisons of temperature for the years 1886, 1888, and 1889:

Month.	1886.	1888.	1889.	Maximum and minimum.					
				1886.		1888.		1889.	
				Max.	Min.	Max.	Min.	Max.	Min.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*	*mm.*
January	27.4	26.8	28.6	37	19	41.8	14	39.6	18.5
February	25.1	28.2	26.6	36.5	13.5	41	14	36.8	18
March	24.7	25.1	25	35.5	16.5	39.5	15.5	35	17
April	20.7	21.6	21.1	32.5	9	32.5	11	32.5	7
May	16.9	16.4	17.5	27.8	5	30	2.5	28.4	7.5
June	12.9	14.4	16.1	26	3	28.4	1	27	4
July	15.8	17.5	17	27.5	1.4	29.5	5.5	28	4.5
August	16.8	20	16.6	29.5	5.2	34	3.5	30	6
September	19.1	21.6	19.6	33.5	5	34.5	10.5	33.8	5
October	20.7	22.4	21.5	36	9.1	37.5	12.6	35	11.5
November	23	25.3	25	36.5	13.2	36.5	13	34.5	8.2
December	25.9	26.7	25.6	39	11.5	39	12.6	35.4	18
Total	249	266	260.2	.....	.....	.....	.....	.....	.....
Yearly average	207.5	222	217	.....	.....	.....	.....	.....	.....

The average for the three years was 215.5 millimeters.

LANGUAGE.

The Spanish, English, German, and French, together with the Guaraní, are the languages spoken.

The Guaraní language is, as it is called in the language itself, Abãnẽẽ. It was spread over a great part of South America in ancient times, and the Tupi tongue in Brazil and the Kichva tongue in Bolivia and Peru, still spoken, prove to be similar to the Guaraní. In modern times Guaraní is only spoken in Paraguay and the Argentine province of Corrientes; many

words of Spanish have been mingled with it to supply words that it never had or which have dropped out of use. In the towns Spanish is generally spoken and understood, but in the "camp," or country, Spanish is of no use, as the people know nothing of it. The pronunciation of the Guaraní being extremely difficult, it is doubtful if it is possible for a foreigner to pronounce the written tongue in the same manner as a Paraguayan would do, but nevertheless the foreigner, having the living example around him, can verify what he learns by actual trial among the people. There are several very good grammars now in use.

RIVER SERVICE.

The first company on the River Plate was the Mensayarias Fluviales, established and owned by Señor Laturno, which was formed at the close of the Paraguayan war by buying a number of vessels used during that period and also by a number built at Glasgow. In 1877 the company owned and ran fourteen steamers.

The second company, the Platense, was organized in 1878 by Mr. Vacusovitch, who was formerly a captain of the Mensayarias Fluviales Company. In the year 1882 a third company, under the name of Lloyd Argentino, was formed by the amalgamation of not only a number of old vessels which had been running on the River Plate, but by a number of old blockade runners from the United States. The Platense Company, finding themselves confronted by the opposition of the Mensayarias Fluviales and the Lloyd Argentino with twenty-four steamers (the first with fourteen steamers on the Uruguay and the second with ten steamers on the Paraná), entered into negotiations to buy up the lines, which they succeeded in doing in 1877, paying for the Lloyd Argentino steamers and workshop £250,000 and for the Mensayarias Fluviales £450,000. The three companies were then formed into one, under the name of the La Platense Company (limited), with a capital stock of £1,000,000. The company continued to buy other steamers and vessels, with the hope of controlling the entire trade of the three rivers, until their fleet comprised nearly one hundred vessels of all kinds; but they were not successful, owing to the building of other boats, the falling off of traffic, and the cheaper freight rates prevailing, so that in the year 1890 the company went into liquidation, and on the 13th of October, 1891, it was placed on the market for sale at Glasgow, the price being £450,000. No bids being offered, the sale was withdrawn. The company still continues to run a weekly line of boats to this point. Passenger rates are $30, and freight rates $4 per ton of 40 cubic feet. The Platense also runs a line connecting Villa Concepcion with the capital.

The opposition to the Platense is a line of three very good steamers, which make weekly trips from Montevideo and Buenos Ayres. Passenger and freight rates are somewhat cheaper,

DIPLOMATIC RELATIONS.

The Argentine Republic, Uruguay, and Brazil have legations in Asuncion. Germany and Switzerland, France, Greece, Portugal, Great Britain, Norway and Sweden and Denmark, Chile, Italy, Spain, Venezuela, Austria and Holland, and the United States are represented by consulates.

GOVERNMENT.

The form of government resembles very much that of the United States. The present constitution was proclaimed November 25, 1870. The President is elected for four years; he has a cabinet of five ministers, viz, foreign affairs, interior, finance, justice and public worship, and war and marine.

The Congress is composed of two houses, namely, the Senate and House, the members of which are elected by the people. The senators number thirteen and the deputies twenty-six. They are elected from districts, each district being allowed one senator for every 12,000 inhabitants and one deputy for every 6,000 inhabitants. The deputies are elected for four years and may be reëlected; half the number of this body retire every two years. The senators are elected for six years and can also be reëlected; one-third of their number retire every two years. The senators and deputies receive a salary of $250 per month.

The judiciary is vested in a supreme tribunal of justice. Civil, commercial, and criminal judges are established in the capital and justices of the peace in the country and towns.

The following is a list of the Presidents from the time the Republic was established, together with date of elections:

Cirilo Antonio Riverola, November 24, 1870.
Salvador Jivellanos, December 18, 1871.
Juan Bautista Gill, November 25, 1874.
Higinio Uriarte, April 12, 1877.
Candido Bareiro, November 25, 1878.
Gen. Bernardino Caballero, September 4, 1880.
Gen. Patricio Escobar, November 25, 1886.
Juan G. Gonzalez, November 25, 1890.

LAWS.

In Paraguay, as in all South American Republics, the laws themselves are better than their administration. The jurisprudence, founded on the code of Spain, is not generally approved by the foreign residents. For purposes of internal administration the Republic is divided into departments, which are subdivided into cantons. Each town or subdivision has a municipal government and each department a political chief, who possesses certain executive powers. The Chaco, or western, department is under military command. There are also four others which act for the defense of the river front and all the frontiers.

RELIGION.

The religion is Roman Catholic, but all other forms of worship are recognised.

MILITARY.

The army in time of peace is very small, but in case of war every Paraguayan from twenty to fifty years of age must serve. The following is the number of the standing army at present: One battalion of infantry of two companies, 1,000; two squadrons of cavalry, 1,500; one brigade of artillery, 750; total, 3,250. The only gunboat in the navy is the *Pirapo*.

MONEY.

There is no gold or silver coin issued by the Government, but the English and Argentine sovereigns circulate freely. The paper dollar, or peso, equivalent to 100 centavos (cents), is the standard of value. The fractional currency is only printed on one side. The American Bank Note Company, of New York city, has the contract for printing all the money of this Republic.

WEIGHTS AND MEASURES.

Since 1886 the metric system has been obligatory in this Republic, but it will be some years before the old Paraguayan system will be abandoned. The following tables are in common use: One arrobe is equal to 25 pounds; 4 arrobes are equal to 1 quintal; 20 quintals are equal to 1 ton; 80 arrobes are equal to 1 ton; 2,000 pounds are equal to 1 ton; 1 league is equal to 5,000 varas; 1 square league is equal to 3,600 manzanas; 1 manzana is equal to 1¼ English acres; 1 square league is equal to 4,500 English acres; 1 vara is equal to 34.1 English inches; 1 cuadra is equal to 83⅓ varas, or 78.9 English yards; 1 league is equal to 60 cuadras, or 4,735 English yards; 1 square vara is equal to 8,077 English square feet; 1 square cuadra is equal to 10,000 square varas, or 8,974 English square yards, or 1.8512 English acres; 1 square league is equal to 2,500 square cuadras, or 4,633 English acres.

CUSTOMS LAW.

Import duties.—All foreign merchandise imported pays an ad valorem duty of 25 per cent, with the following exceptions:

	Per cent.
Firearms, powder, shot, fine wines and liquors, perfumery, tobacco, cigars, and matches	50
Clothing, hosiery, saddlery, harness, carriages	40
All articles made of silk, ordinary table wines, and beer	30
Jewelry and precious stones	10

Horses, cattle, fresh fish, Portland cement, Roman earth, furniture of immigrants, gold and silver (coined or uncoined), empty bottles, printed books, globes, maps, scientific instruments, printing presses and type, coal, iron, resin, soda, oil, animal black, and all agricultural implements for immigrants are exempt from duty.

All foreign merchandise subject to duties of importation pay according to their declared value, with the following additional duties: Four per cent for the support of the National College and superior education; 4 per cent (law of May 1, 1882), also 8 per cent (law of March 6, 1886), for amortization of national bank notes; and 3 per cent (law of March 6, 1886) for the council of education.

The amount of import duties exceeding $300 may be paid in bills, half at sixty days' sight and the balance at one hundred and twenty days' sight, including interest at 1½ per cent monthly; the additional duties of 4 per cent for the support of the National College and superior education in bills at ninety days' sight; the additional duty of 8 per cent in bills at forty-five days' sight, including interest at 1½ per cent monthly. Flour pays 19 per cent additional duty, in the form indicated (law of September 11, 1891). All other duties are payable at sight.

Export duties.—Paraguayan tea, ground (law of August 29, 1891), 25 cents per pound; Paraguayan tea in leaf (law of August 29, 1891), 30 cents per pound; tobacco tied with ibira (law of August 29, 1891), 25 cents per pound; tobacco tied with wire (law of August 29, 1891), 15 cents per pound; hides (law of August 29, 1891), $1 each.

EDUCATION.

Primary education has been obligatory for children of both sexes since November, 1881, and the money voted for that purpose was, in 1887, $158,459. There are at the present time one hundred and thirty-nine schools, with an enrollment of sixteen thousand scholars of both sexes. Secondary education is provided for in the capital, and in 1888 the sum of $160,000 was expended by the Government for educational purposes. The council of education, under the direction of the minister of public instruction, established four academies or colleges in the towns of Villa Rica, Villa Concepcion, Villa Encarnacion, and Villa del Pilar.

By the law of October, 1887, the following sums are devoted to education: (1) The sum noted in the general tax; (2) 10 per cent of the product of sales of the public lands and yerbales; (3) an additional 3 per cent as soon as the amortization of the internal debt is complete; (4) the fines in general; (5) the product of vacant inheritances, successions, etc.; (6) one-half the proceeds of judicial sales; and (7) a yearly tax of $1 on each male over twenty-two years of age domiciled in the Republic.

The National College and National University are located in Asuncion, and are sustained by an appropriation of 4 per cent of the customs dues. In 1889 the college was divided and the National University was founded. After the division the dormitory system was done away with in the college. The collegiate course covers a period of six years, and embraces a liberal curriculum. Spanish and French are taught, as well as history, philosophy, and the natural sciences. The use of the Guaraní language is prohibited in the precincts of the college and the university.

The following table will show the number of students and professors in attendance at the different colleges:

Colleges.	Students.	Professors.
Asuncion	205	15
Villa Rica	98	3
Villa Pilar	43	4
Villa Concepcion	23	4
Villa Encarnacion	21	4
Total	385	30

The National University is devoted entirely to the education of students for the law, of which there are twenty-five, with five professors.

Connected with the college and university is the largest library in Paraguay, consisting of over three thousand volumes, mainly in Spanish and French. It is a remarkably well-selected collection.

In 1888 a seminary for the education of young ladies was projected and started, but for some unknown reason it was not a success, and at the end of 1890 it was closed.

THE GRAN CHACO.

The Paraguayan chaco is a vast tract of land of which very little is known or written; it is nearly devoid of white inhabitants. It is bounded on the east by the Paraguay River, on the north by the frontier of Bolivia (which limit is still in dispute), and on the west and south by the River Pilcomayo, which falls into the Paraguay River nearly opposite to the capital. The course of the Pilcomayo has not been surveyed as yet, and it has given much trouble to several explorers to determine its chief channel. In 1880 Dr. Crevaux tried to navigate the river, going with the current from Bolivia towards the mouth, but he only succeeded in reaching a point 23° south latitude, where he was killed by the Indians and his expedition destroyed. The remains of his boats were discovered later on by Captains Baldrich and Fontana in 1882. Feilberg in 1885, Storm in 1890, and Page in 1891 all tried to navigate this river, entering its mouth opposite Lambaré and going towards its head waters. All these expeditions have given the same result, viz, the navigators have been obliged to return without having reached further than 23° south latitude, where, as a rule, the river is dry, with nothing more than a sandy and rock channel, unfit for the navigation even of small boats. But it appears that at 21.50° or 22° south latitude the river divides into two arms, which inclose the island of Ybezeta, and which join again in latitude 25° south. The whole of this big island appears to be arid, sandy, stony, and uninhabitable, dry in the hot season and marshy to excess in the wet. Fontana went up the eastern side of the island in 1882 and Feilberg and Storm the western without any success. In 1890 it had been discovered by Freund that the reason of the want of water in the Lower Pilcomayo is owing very likely to the fact that the river had left its old channel and flows

into a new one, which reaches the Paraguay River in 23° south latitude, running for at least 100 leagues in a nearly easterly direction.

An exploring and surveying party under the command of Mr. Freund went up this branch of the Pilcomayo River and found it navigable, there being 20 feet of water in the channel, the river being about 125 yards in width during seven days' steaming up the river. At this point the river was found to be blocked with fallen trees and floating timber, though still having the former depth of water. It is, therefore, a very feasible scheme, with the expenditure of a nominal sum of money, to make this channel the direct outlet for all Bolivian products and manufactures via the Paraguay River to Buenos Ayres and Montevideo.

The general aspect of the Chaco is very pleasing to the eye. Forests of large and very superior trees, mostly evergreens, interchanged with rich pasture lands unexcelled for grazing purposes, meet the eye at every turn. The different kinds of woods which grow in these forests are mostly hard and very heavy; in fact, too dense to raft down the river, which certainly is a drawback to the exportation of this timber. The soil is everywhere exceedingly rich, being black humus, loam, and marl. All kinds of grain, sugar cane, tobacco, and fruits can be grown to perfection, but there is little or no land under cultivation at the present time, the country only being inhabited by large bands of roving Indians, who are extremely lazy and indolent.

A small part of the Chaco has been surveyed, chiefly the river front towards the Paraguay and a few leagues inland. The divisional lines are 1 league apart and run 10 leagues inland, where a new division begins, but which has been surveyed only in a few cases.

The posts on the river have been numbered and their latitude determined. The landmark next to the city of Asuncion is in latitude 25° 17′ south, and the landmark No. 49, opposite to the town of Villa Concepcion, is in latitude 23° 24.50′ south. The deviation of the magnetic needle at this point is 4° 50′ to the southeast. The interior of the Chaco is not desirable for single settlers, as there are no actual laws or government there at present. The Indians, although peaceful, nevertheless at every opportunity will steal and destroy everything they can. It is much better near the river front.

According to experienced cattle men, the raising of stock will give a yearly increase of 50 per cent. The breeding of mules and mares will also give a good return. The Chaco is void of mineral wealth, except for the small deposits of limestone and manganese. The chief export article at present is the timber of the following trees: Lapacho, or green heart, quebracho, and guayaca, or ironwood. Wild animals, reptiles, snakes, and insects abound in large numbers.

POPULATION.

The total population of the Jesuit reductions in 1740 was ascertained to be 140,000. In 1767, owing to the jealousy of the Spanish Government, the Fathers were expelled, they offering no resistance. In 1801 another census was taken, and it was found that the survivors amounted to only

43,639 souls, having lost about two-thirds of their number in thirty years. The census of 1857 gave a population of 1,337,449, which undoubtedly was incorrect. An estimate of the population by Mr. Washburn in the year 1860 placed the figures at 800,000; in 1886 the estimate was 263,751 inhabitants, of whom 110,280 were males and 153,471 females. The population for the present year will reach in the neighborhood of 400,000. This enumeration does not include the Indians of the Gran Chaco, who are estimated in round numbers at 150,000.

The last census taken of the inhabitants was in the year 1886, since which time no other census has been taken, only progressive calculations made. The census of 1886, probably because the country authorities were inexpert in this matter or perhaps on account of the inhabitants fearing to figure on lists liable to cause them to pay taxes, resulted unfavorably. Before the war the population was estimated at 800,000, and, as before stated, it is the opinion of writers and men of that period that this estimate was correct.

Of the forces which the country had at the time of the war against the triple alliance it is supposed that three-fourths of them were killed, by this means reducing the inhabitants to 200,000 in the year 1870; in 1872 it was placed at 231,000 souls, showing an increase of 2½ per cent. Comparing the progress attained with that of neighboring republics and the situation in which the country remained in 1880, the population was estimated at 255,860. Since the beginning of the year 1881, a time of real reorganization and progress, it has been stated that the increase was 3 per cent. This would place the population in the year 1890 at 400,000, more or less.

The foreign population in the country in the year 1890 was as follows: Argentines, 8,350; Germans, 875; Orientals, 337; Italians, 1,028; Spaniards, 547; Portuguese, 197; Brazilians, 904; French, 389; Swiss, 195; Austrians, 94; English, 68; Bolivians, 27; Greeks, 49; Chileans, 34; Belgians, 25; North Americans, 22; Russians, 7. This makes the European population 13,145 souls. During the years 1888 and 1889 a large increase was noticed among the following nationalities:

Table showing foreign residents in Paraguay in 1888 and 1889.

Nationality.	1888.	1889.
German	255	186
Swiss	51	70
Belgian	13	42
French	119	296
Italian	467	524
Spanish	68	248
Austrian	40	46
English	24	20
Total	1,037	1,332

The following table, showing the population from the year 1775 to 1890, inclusive, was compiled by the Government statistician:

Year.	Number.	Year.	Number.
1775	96,000	1872	231,000
1828	250,000	1886	239,774
1852	300,000	1887	329,645
1857	800,000	1890	400,000
1861	1,300,000		

THE CITY OF ASUNCION.

Asuncion, the capital and center of commerce, is situated on the eastern bank of the River Paraguay in latitude 25° 16′ 29″ south and longitude 57° 42′ 42″ west, at an elevation of 182 feet above the city of Buenos Ayres, from which it is distant 1,150 miles. The city was founded on the assumption of the Blessed Virgin on August 15, 1536, by Commander Ayola, at the head of 300 men. It is much older than Buenos Ayres, and to-day preserves much of its medieval character. Although Du Graty estimated the population in 1860 at 48,000, it is very evident that at no time in the last three centuries has it exceeded 30,000. The elevation of the city over the river is about 60 feet, which at this point is 2,000 feet wide, and 307 feet above the sea.

The first part of the city seen on approach is the remains of the arsenal built for Lopez by Messrs. Whitehead & Grant in the year 1861. It employed for some years about 300 men, among whom were 30 English mechanics, besides a few French and Germans, the rest being natives. They constructed and launched several mail steamers, which plied between Asuncion and Montevideo; also cannons, stoves, tools, bells, and a host of other useful articles were turned out in vast numbers.

As in all South American towns and cities, the streets cross each other at right angles, or checkerboard fashion, cutting the city into blocks of 80 yards square, the streets being 15 yards wide and the sidewalks from 4 to 5 feet wide. A few years ago the streets were almost impassible, owing to the sand, deep ruts, and gullies.

Two years ago Congress appropriated enough money to pave the greater portion of the city proper, but, owing to the financial crisis, it has not been completed. The houses are generally of one story, and are built very similar to the adobe of the southwestern territories of the United States in architecture and general character, the only great difference being the mode of constructing the roof—here sheet iron, tiles, and straw are used; there, mud and straw or sun-dried bricks.

One of the most conspicuous buildings in the city, and bordering on the river, is the palace, built by Lopez for himself after his return from France, but which was never occupied by him. During the war it was partially destroyed, but was rebuilt, and last year the Government appropriated sufficient sums to finish and furnish it for its own use.

The railway stations, the cathedral and churches of Encarnacion and San Roque, the hospital, Government house, market, public library, college, university, and theater all attract attention; and last, but not least, in the eye of the tourist are the two massive uncompleted structures, started by Lopez but never finished, viz, the old theater, an imitation of La Scala, at Milan, occupying an entire square or block, and the Mausoleum, modeled after the Invalides in Paris, built for the reception of his body. There are a great many fine residences throughout the city and suburbs, which, with their surroundings of shrubs and flowers, form a picturesque and pleasing sight.

The city has five lines of tramways, all centering at the port, one to Villa Morra, 4½ miles distant; another to the *cancha* (race course), 3 miles; from the *cancha* to the town of Trinidad is a connecting line of 3½ miles, and still another to Tucumbú, where the stone for paving the streets was quarried, which is 3 miles; and, lastly, a circular or belt line traversing the principal streets for a distance of 3 miles, making a total of 17 miles of single track.

There are six newspapers published in the city, one morning, four evening, and an illustrated monthly paper, with the following names: Republica, Democracia, Independiente Tiempo, Diario Oficial, and Latigo.

The business of Asuncion is conducted by about four hundred and twenty business houses, with a capital of $1,940,630, and in the entire country are nine hundred and sixty-one business houses, with a capital of $3,150,000, owned and managed by the following nationalities in order: Italian, Spanish, Paraguayan, German, and French. It is a strange fact, but nevertheless true, that there is not an English firm doing business in the Republic of Paraguay. The banking business of the city has narrowed down to three institutions—the Bank of Paraguay and Rio de la Plata, with a capital stock of $8,000,000, the National Bank of Paraguay, with a capital of $1,200,000, and the Mortgage Bank, with a smaller capital. There also exists the Territorial Bank or building society.

Asuncion is well lighted with petroleum, and an electric-light plant has been completed lately at the *cancha*, but it is not as well patronized as it should be. There are very few electric lights in the town proper. The city communication is conducted wholly through the telephone, which has been very successful. Two lines of telegraph have been constructed, one connecting with Buenos Ayres and the other is on the line of the railway.

Although times are exceedingly hard and money very close, building in the last year seems to have taken quite a boom. The business houses and residences now building are more substantial and are better constructed than heretofore.

The city has no system of waterworks, everybody depending upon wells, cisterns, and the river for their supply. The city is well guarded and patroled by police, and crime and lawlessness are almost wholly unknown. The construction of the houses is such that the want of a fire service has never been felt or needed.

TOWNS.

Villa Rica.—The next town in size and importance is Villa Rica, situated between the rivers Tebiquary and Tebiquary-mini, 90 miles east of Asuncion, in the most fertile and productive district in the country. It is surrounded by tobacco and mandioca, with hills running east and west covered with large timber, which is very suitable for furniture and building purposes. It is also celebrated for its cigars. In 1890 the population was estimated at 15,000.

Villa Concepcion.—This town, situated 250 miles north of Asuncion on the Paraguay River, is a place of great activity and importance, being situated near the great yerbales, which are about 70 miles inland. This town is connected with Asuncion by a line of steamers, leaving weekly. The population in 1890 was 7,000.

Among the principal towns may be mentioned Caazapá, 12,144; Carapeguá, 10,883; Luque, 8,872; Yuty, 6,820; Villa Pilar, 6,740; Paraguari, 6,059; Ititimi, 5,973; and San Estanislado, 5,769.

The population according to departments in the year 1866, as compared with that of 1890, was as follows:

Departments.	1886.	1890.
Villa Rica	10,773	15,000
Villa Concepcion	10,902	10,000
Villa Pilar	14,392	7,000
Villa Encarnacion	6,548	7,000

RAILWAYS.

The railway from Asuncion to Paraguari, 45 miles, was constructed for President Francisco Solano Lopez in 1860–'63 by Messrs. Burrel and Valpy, who employed 5,000 soldiers as workmen. It was intended to run the line as far as Villa Rica, 90 miles, but the fall of Lopez stopped all work.

In 1870 a contract was signed in London between the Paraguayan consul-general and Messrs. Waring Brothers for the completion of the line, but the Government at Asuncion ignored and cancelled the contract. In 1887 work on the road was resumed under a contract with Señor Patri to prolong the line from Paraguari to Villa Rica. In September, 1888, the road was opened 12 miles further east, to a station called General Escobar. In July, 1889, the road was completed to Villa Rica, a distance of 90 miles from Asuncion. In 1887 the Government granted to Dr. William Stewart, British consul at Asuncion, a concession for the construction of a railway from Villa Rica to Villa Encarnacion, on the River Paraná, opposite the town of Posadas, in the Argentine Republic. This town is the terminus of the Northeastern Argentine Railway, which will, when completed, give direct communication between Asuncion and Buenos Ayres. In 1890 work was commenced, and on the 4th of August, 1891, the road was opened as far as

Pirapó, a distance of 62 miles from Villa Rica, leaving 70 miles to be completed before the contract is fulfilled.

The length of the complete Paraguayan Railway up to the present time is as follows: Asuncion to Paraguari, 45 miles; Paraguari to Villa Rica, 45 miles; Villa Rica to Pirapó, 62 miles; total, 152 miles.

Trains run daily from Asuncion to Villa Rica, leaving the former place at 6 a. m. and arriving in Villa Rica at 3 p. m.; returning, leaving Villa Rica at 6 a. m. and arriving in Asuncion at 3 p. m. The road is undergoing considerable repairs at the present time. The company has just received a number of miles of rails to replace those which have become worn out.

There are four classes of coaches in use, the third and fourth classes being occupied by the poorer people, mainly women. First-class fare is 4 cents per mile. The railway traverses the richest and the most fertile and thickly populated districts of Paraguay. The number of passengers carried during the year 1888 was 257,688, and the amount of traffic was $161,550; in 1889, 235,407 passengers and $286,632 traffic; in 1890, 275,480 passengers and $391,743 traffic. The railway was placed upon the London money market on April 29, 1889. The capital was £482,930, and £210,000 6 per cent preference shares were given to the Government of Paraguay in part payment of the line from Asuncion to Villa Rica, and the remaining issue was £272,930 ordinary shares and £400,000 5 per cent debentures. The guaranty of the Government upon the line was 6 per cent for twenty years for a cost not exceeding £6,000 per kilometer on a length of 219 kilometers.

A concession without any guaranty, but with a grant of land, was given to General Osborne for a railway starting from the western bank of the River Paraguay and going in the direction of Sucre, Bolivia. In 1876 a survey was made for a railway which was to start from ———, Brazil, and run thence to Matto Grosso and Bolivia, thus placing Paraguay in close communication with Rio de Janeiro. This concession was granted to Perry, Cutbill de Lunyo & Co., with a guaranty of 6 per cent.

In the latter part of 1889 Count Abert de Thessien applied for a concession from the Paraguayan Government to construct a railway from Asuncion to Santos, Brazil, via San Estanislado and Tacurupucú, on the Alto Paraná. On August 27, 1891, the concession was ratified by the Paraguayan Government, which guaranteed 6 per cent on $30,000 per kilometer for a period of thirty years for road constructed in Paraguayan territory. The road was to be 1 meter (narrow guage), allowing 20 meters on each side from center of track. The Government also concedes land for stations and yards, if any, the survey and plans to be completed in eighteen months and the road in four years. The distance between Asuncion, Paraguay, and Santos, Brazil, is about 200 leagues.

REVENUES AND EXPENDITURES.

Table showing the revenues and expenditures for the years 1887 to 1890, inclusive.

Description.	1887.	1888.	1889.	1890.
Revenues.				
Custom-house dues	$1,153,689.96	$1,389,106.63	$1,419,881.27	$1,183,425.94
Sales of land and yerbales (Paraguayan tea)	1,686,244.02	1,788,302.99	815,304.28	324,873.79
Lease of Government lands and yerbales, forests, limekilns, etc	23,891.42	31,309.75	14,055.75	12,653.50
Dividends and interest from national bank	60,815.89	61,489.42	93,622.28	.....
Port dues and sanitary patents	2,849.50	3,031.65	3,093.45	3,047.30
Stamped papers and telegraph receipts	89,026.33	122,613.00	127,982.31	120,130.01
Surveys of yerbales	7,917.37	13,154.78	4,193.65	.....
Patents of commercial houses	8,785.06	9,894.00	11,821.81	10,131.59
Police dues, town and country	1,764.50	1,117.00	424.50	301.00
Mortgage office receipts	9,163.45	11,711.00	7,353.35	8,954.75
Troopers' permissions (passes for cattle)	359.30	960.95	547.65	454.20
Judicial auctions	6.25	7.13	.....	.....
Interest of bills to be recovered and discounted	48.44	2,374.74	8,984.99	8,941.07
Police fines (town and country), fines for non-attendance of jurors, and stamped paper	.....	2,118.00	3,517.50	4,751.00
Municipal revenues (15 per cent)	.....	9,448.99	4,723.68	17,742.17
Duty of $1 on each male inhabitant	.....	23,865.45	7,993.00	9,466.80
Duty on children's entrance in public schools	.....	1,249.40	1,259.15	468.95
Government stock of railway material	.....	400.00	1,714.00	53.20
Values willed without claimants	.....	.....	313.48	51.40
Sales of books, etc., for schools	.....	.....	21.30	46.70
Paving dues	.....	.....	22,868.97	23,024.38
Sale of railway (gold)	.....	.....	1,575,000.00	.....
Duty on trade-marks and cattle marks	.....	.....	.....	550.00
Market dues	.....	.....	.....	7,044.27
Total	3,044,561.49	3,472,154.88	4,124,676.31	1,736,112.92
Expenditures.				
Ordinary and extraordinary expenses	1,402,579.26	1,245,239.08	1,302,449.89	1,116,357.37
External debt and public works	.....	1,545,772.61	.....	.....
Outlays by special laws	.....	.....	2,950,347.69	1,126,273.47
Total	1,402,579.26	2,790,951.69	4,252,797.58	3,242,630.84
Surplus	1,641,982.23	681,203.19	.....	.....
Deficiency	.....	.....	128,121.27	1,506,517.92

The revenues are mainly derived from duties levied on imports and exports, warehousing, stamped paper, licenses, etc.

The value of imports in 1890 amounted to $2,725,611.99, which paid duties amounting to $990,451.18; the value of exports in 1890 amounted to $2,901,589, which paid duties amounting to $193,626.65; excess of exports over imports, $175,977.01.

The budget for the year 1887 was $831,441.75, and for the last three years it has been steadily decreasing.

The following table shows the comparison between the year 1887 and the year 1890:

Departments.	1887.	1890.
Interior	$301,044.00	$205,972.40
State	241,660.00	200,188.70
Treasury	146,496.00	131,439.06
Justice and public instruction	281,493.75	133,158.11
War and navy	181,236.00	279,447.21
Total	1,151,929.75	950,205.48

COMMERCE.

Table showing the official value of exports from Paraguay for the years 1888 to 1890, inclusive.

Products.	1888.	1889.	1890.
Vegetable oils in general	$1,393.50	$1,382.00	$1,627.50
Sawdust of quebracho (hard wood)	16.90	227.40	.....
Starch	1,692.00	1,209.60	4,688.80
Horns	442.00	529.00	635.00
Charcoal	91.50	.....	20,220.00
Bark for tanning	4,309.55	3,704.20	7,927.95
White rum (made from sugar cane)	489.60	4,116.80	704.40
Caraguatá (fibrous plant)	35.60	80.40	5,442.80
Horsehair	7,444.00	15,260.00	10,996.00
Cigars	5,335.00	3,922.00	3,003.50
Cowhides	219,183.00	234,222.00	323,244.00
Skins of animals	3,557.50	4,802.00	3,245.50
Jam and sweets	1,407.00	174.00	252.00
Sleepers	16,990.00	41,807.00	13,466.00
Essence (petit grain)	31,395.00	5,781.00	1,320.00
Hoofs	222.60	141.60	5.40
Grease:			
Cow	465.00	1,221.00	360.00
Hog	4,252.50	2,863.00	4,466.00
Flour	6,745.00	6,490.00	698.00
Common soap	13,541.00	13,497.00	6,550.00
Wool	50.00	510.00	1,530.00
Liqueurs	65.00	772.50	286.50
Timber	231,268.80	230,913.90	342,929.30
Oranges	59,180.00	45,884.00	95,205.50
Palm trees	32,084.00	25,977.60	52,598.40
Tobacco fiber	2,131.00	2,131.20	1,404.80
Sweets for dessert	5,658.60	1,576.50	2,392.50
Ostrich feathers	464.00	1,147.00	292.00
Wheels (rododes)	2,730.00	3,010.00	1,100.00
Trunks of trees with bark removed	18,000.00	15,195.00	79,545.00
Tobacco	438,188.00	481,105.00	615,310.00
Boards	6,258.60	8,302.40	13,054.00
Tomatoes	6,825.00	3,261.00	9,855.00
Yerba mate (Paraguayan tea)	1,293,476.00	976,644.00	1,251,450.00
Tanned hides	756.00	1,278.00	3,618.00
San José-mi (no details)	47,650.50	39,263.62	.....
Other articles not detailed	5,061.43	4,979.45	28,165.15
Total	2,468,855.18	2,183,381.17	2,901,589.00

Table showing imports of merchandise on which duties were paid in the years 1888 to 1890, inclusive.

Products.	1888.	1889.	1890.
Comestibles and other articles of general consumption	$485,711.79	$623,028.45	$612,836.83
Liquids (beer and ale, wines, liquors, etc.)	555,908.70	530,119.35	428,046.30
Porcelain, china, etc. (fine work)	3,377.10	1,918.30	1,684.05
Crystal, glass, etc	963.00	1,229.50	1,031.00
Glass (general use, cast in molds)	4,877.80	4,216.65	2,028.90
Cut glass	2,275.40	2,056.80	1,584.00
China :			
White and painted (ordinary class)	5,088.47	4,516.81	2,665.31
Stone	1,460.60	1,753.80	1,713.20
Furniture in general	33,004.77	35,348.27	21,907.26
Hats and caps of all classes	54,255.52	47,619.20	28,434.74
Prepared hides and skins	11,149.40	12,363.10	12,888.00
Saddlery, harness, etc. (foreign make)	7,563.90	10,808.70	12,969.61
Boots and shoes	39,627.10	52,094.05	29,522.35
Musical instruments	4,316.20	3,801.70	7,527.40
Watches, clocks, and jewelry*	3,104.78	4,713.60	1,885.00
Drugs	40,899.16	37,064.47	27,486.16
Medicines (special preparations)	10,497.23	17,193.15	12,827.43
Surgical instruments, druggists utensils	2,850.94	2,729.92	1,939.94
Hardware	158,734.91	183,648.42	103,518.07
Guns, rifles, revolvers, pistols, and other arms	16,915.46	24,190.56	17,323.07
Woven goods of all classes	725,364.63	661,458.17	471,963.61
Manufactured goods of all classes	62,068.60	55,328.42	47,442.45
Haberdashery	171,401.57	164,310.03	112,635.13
Lamps and other articles	12,023.70	8,025.68	5,105.38
Articles not included in the tariff	30,465.77	39,527.67	10,137.81
Zinc (pays only 8 per cent additional duty)	49,051.73	74,515.55	.....
San José-mi (without details)	7,311.86	7,655.10	.....
Total	2,500,270.59	2,611,236.42	1,977,043.00

*Jewelry, being an article generally smuggled, pays heavy duties.

Table showing value of merchandise, machinery, etc., imported free of duties by special laws.

Articles.	1888.	1889.	1890.
Sulphuric acid	$240.00	$259.20	$171.60
Wire for fencing	49,744.56	43,553.10	30,403.30
Plows	510.50	1,239.50	1,200.00
Hoes	3,461.25	2,894.55	1,662.90
Saffron	880.00	1,120.00	175.00
Sugar	3,351.45	535.50	690.00
Lime	71,485.67	33,758.25	61,727.34
Coal	27,823.40	21,583.00	23,911.15
Soda ash	12,024.00	10,969.85	4,865.50
Remedies	418.68	500.01	172.10
Wax	1,605.00	2,458.75	.....
Flour from mandioca	1,614.90	1,020.10	154.00
Iron :			
Unworked	24,324.80	22,624.50	10,965.85
Galvanized	.....	.....	18,366.24
Gum (various classes)	1,180.80	1,386.70	.....
Iron staples	830.76	469.44	210.24
Grease	10,946.88	7,872.00	6,289.36
Account books and others	4,456.00	3,029.00	8,473.00
Sewing machines	15,244.00	31,032.00	5,698.00
Machinery and materials	110,324.97	101,737.00	75,114.80
Knives for cutting weeds, etc. (machetes)	7,005.20	8,880.20	4,917.80

Table showing value of merchandise, machinery, etc.—Continued.

Articles.	1888.	1889.	1890.
Railway material	$78,800.00	.....	$266,595.00
Printing paper	8,769.76	$14,121.34	5,841.94
Resin	63,204.22	13,036.36	7,433.15
Seeds	5,490.00	2,062.40	10,991.60
Roman cement	25,438.98	20,836.00	9,173.86
Wheat and flour	221,729.64	222,608.52	160,129.08
Articles not detailed	34,780.10	16,525.22	33,296.18
Total	785,385.52	586,932.49	748,568.99

Table showing the total trade of Paraguay for the years 1888, 1889, and 1890.

Description.	1888.	1889.	1890.
Merchandise subject to payment of custom-house duties	$2,500,270.59	$2,611,236.42	$1,977,043.00
Merchandise imported free of duties	785,385.52	586,932.49	748,568.99
Total	3,285,656.11	3,198,168.91	2,725,611.99
Exportation	2,468,855.18	2,183,381.17	2,901,589.00
Grand total	5,754,511.29	5,381,550.08	5,627,200.99

Table showing custom-house receipts during the years 1888 to 1890, inclusive.

Years.	Imports.	Exports.	Total.
1888	$1,216,790.99	$172,321.42	$1,389,112.41
1889	1,265,575.19	154,307.09	1,419,882.28
1890	990,451.18	193,626.65	1,184,077.83

Until to-day Paraguay has always been tributary to the Argentine Republic, and consequently nearly all the products exported leave destined to the ports of that Republic. As far as the nationalities of the exporters are concerned it is impossible to determine, as all the commercial houses buy the country products and remit them to pay in part the invoices of articles bought by them. In 1890–'91 it appears that the Germans exported sundry produce directly to Germany, comprising the following articles, viz, cotton, tobacco, timber, and skins of wild animals.

With the exception of the importation of a little timber and a few agricultural implements the trade with the United States does not amount to much.

POST-OFFICE AND TELEGRAPH.

The following table shows the movement of mail matter and telegrams for the years 1888 to 1890, inclusive:

Years.	Postal service.				Telegraph service.		Total.
	Number of receipts and dispatches.	Sales of postal values.	Receipts from post-office boxes.	Unstamped correspondence.	Number of dispatches sent and received.	Receipts from telegrams.	
1888.....	539,159	$11,293.78	$1,045.60	$239.58	21,778	$9,050.38	$21,629.34
1889.....	818,005	12,936.67	1,396.80	75.65	23,437	6,350.84	20,759.96
1890.....	1,003,847	15,680.70	1,479.20	43.60	28,322	9,087.24	26,290.74

NAVIGATION.

The following table shows the movement of vessels entering and clearing the ports of Paraguay for the years 1888 to 1890, inclusive:

ENTERED.

Years.	Steamers.	Sailing vessels.	Total tonnage.	Crews.	Passengers carried.	Vessels loaded.	Vessels in ballast.
1888.....	1,620	2,612	181,054	25,459	20,951	1,642	2,590
1889.....	1,272	2,026	183,724	26,440	15,158	1,513	1,785
1890.....	1,663	1,287	176,692	20,230	12,658	694	1,812

CLEARED.

1888.....	1,550	2,677	181,167	25,433	16,976	1,914	2,313
1889.....	1,255	2,108	173,271	20,452	14,280	1,243	2,120
1890.....	1,661	1,284	167,159	19,372	11,700	878	1,623

IMMIGRATION AND COLONIZATION.

At the present time there is very little or no immigration to this Republic, owing perhaps to the financial crisis. The only hope of Paraguay lies in her success is attracting to her fertile, well watered and wooded territory a part of the surplus population of overcrowded Europe.

In the last few years Brazil and the Argentine Republic have absorbed the greater part of the immigration to South America, and now these countries are badly off financially, with all their best lands taken up or in the hands of speculators, who hold them at inflated prices; the immigrant must therefore look for fields and pastures new, and consequently, in time, must turn his footsteps towards Paraguay.

In this Republic there are at the present time seven flourishing colonies and two more in formation which, by the end of the present year, will be in good running order. The following is a description and statement of what the principal ones accomplished in the year 1890:

Villa Hayes.—In the year 1880 the Government established this colony on the margin of the village of the same name, formerly called Bordens. It

is situated on the right bank of the River Paraguay, 5 leagues from the capital. It comprises 3,125 squares, divided into lots of 16 squares each for the establishment of the agriculturists.

There are also 6,000 squares of pasturage for the common use of all. Besides agriculture, which gives employment to nearly all the inhabitants, there are several manufactories of material for house-building and a distillery equipped with the best machinery for the production of liquors, principally white rum.

In the year 1890 the colony contained 91 families, consisting of 315 persons, of whom 112 were Swiss, 69 French, 38 Italians, 22 Belgians, and the rest Germans, Austrians, Spaniards, etc.

The number of squares under cultivation was 389, divided as follows in lines of 100 yards:

Products.	Lines of 100 yards.	Products.	Lines of 100 yards.
Sugar cane	9,504	Lucern	1,460
Maize	8,085	Tobacco	321
Beans	1,917	Onions	336
Mandioca	2,366	Fruit trees	17,605
Sweet potatoes	2,555		

The number of squares fenced with wire was 556.

The Government provided for the use of the colony 64 oxen and 32 cows. The number of cattle owned by the colonists was 3,828 cows, 133 horses, 98 sheep, 97 hogs, and 2,570 poultry.

During the year 1890 the exports of the colony to Asuncion were as follows:

Articles.		Quantity.	Value.
White rum	demijohns	7,800	$21,840
Lucern	arrobes	2,400	1,920
Potatoes	do	720	1,440
Beans	do	120	180
Brooms	dozen	400	1,400
Onions	number	370,000	3,700
Steers	do	210	6,300
For the military post of the village:			
Maize	arrobes	4,000	2,000
Lucern	do	3,000	1,500
Total			40,280

In the first years of the establishment the Government gave to each family composed of from three to five persons free passage from the point of embarkation; maintenance for six months and longer in case of inundation, drought, etc.; cottages, implements of agriculture, and seeds, payable in part payments; animals for farm work; and 16 squares of land, the titles being delivered after five years' residence. The right of purchase of from one to four lots more at the rate of $2 per square is also given. Owing to the

great inducements, at the commencement a great many families arrived. Many have left the colony, however, and moved to the eastern part of the Republic. At the present day the law has been modified, and each family that establishes itself receives only 16 squares of land, implements of agriculture, a pair of oxen, a cow, and $50.

San Bernardino.—In the year 1881 the colony of San Bernardino was established by the Government in the department of Altos, at the foot of the mountains that form the northern limit of the lake of Ipucaray, two hours' journey by rail from Asuncion. The village of the colony, owing to its topographical situation, has been taken advantage of to build a number of cottages after the Swiss style of architecture, which gives an aspect very pleasing to the eye of the traveler. The baths, some established on the bank of the lake and others on the slope of the mountains in the form of cascades, and its well-arranged hotels induce many families from the capital to pass the hottest of the summer months there. This colony was founded on the same laws and enjoys the same privileges as Villa Hayes. The number of inhabitants in 1890 was 353, mostly Germans, who have thirty-six houses and cottages.

The number of squares under cultivation (with 154,561 yards of wire fencing) is 418½, divided as follows in lines of 100 yards:

Products.	Lines of 100 yards.	Products.	Lines of 100 yards.
Maize	17,121	Beans	2,513
Mandioca	11,899	Sugar cane	1,487
Potatoes	2,344	Tobacco	190

Of rice, peanuts, and potatoes there are 8 squares under cultivation, and of lucern and ungola grass, 7 squares. There are also fruit trees and plants as follows: Pineapples, 36,347 plants; vines, 3,379; plantains, 14,111 plants; mamones (fruit peculiar to the country), 1,712 plants; fruit trees (principally oranges), 17,837; coffee, 135 plants.

As in the colony of Villa Hayes, the Government furnished 17 oxen and 6 cows. The colonists own the following: Cows and oxen, 3,529; horses, 328; hogs, 274; poultry, 3,944. In the way of manufactories there are three brick factories, one distillery, and one brewery. The produce and cattle are shipped to Asuncion, where they command high prices.

New Germany.—This was the first private colony established on a formal basis in Paraguay, and was organized in the year 1887. It is situated in the department of San Pedro, in latitude 24° south, at the conjunction of the Aguaray-guasú and Aguaray-mi rivers, distant 23 leagues from the River Paraguay, with which it possesses communication through the Aguaray-guasú and Jejuy rivers by means of flat-bottomed boats and small steamers of light draft.

The grant, which was conceded by the Government to Dr. Forster, was 12 leagues square, composed for the most part of virgin forests. After the

death of Dr. Forster his creditors took charge of the property and continued the work with a new capital of $50,000. The land has been sold to the colonists at the rate of $2 per square.

The population for the year 1890 was 60 families divided as follows: Germans, 56; Swiss, 3; Austrians, 1; giving a total population of 193 persons, 138 being adults and 57 children; houses and cottages, 74.

For the year 1890 there were 129 squares under cultivation, and 18,900 yards of wire fence.

The live stock is divided as follows: Cattle, 463; horses and mares, 90; hogs, 24; poultry, 1,010.

Elise San Antonio.—This colony belongs to the Paraguayan and River Plate Bank and was established in 1890 in the department of San Lorenzo de la Frontera, on the bank of the River Paraguay, 3 leagues from Asuncion. The land destined to this end comprises 1,000 squares and measures 1,000 meters on the bank of the River Paraguay. It has been divided into 43 lots of 16 squares each, of which 13 lots are already occupied. The bank has reserved the intermediate lots and over and above 280 squares on the river front for the establishment of a port. Seven-eighths of the land is composed of forests, excellent for the cultivation of tobacco, coffee, sugar cane, plantains, pineapples, ramie grass, etc. The first colonists confined themselves to the cultivation of tobacco, sugar cane, and plantains.

The conditions established by the bank for the inhabitants are as follows: The bank sells to each family 16 squares (12 hectares) of land, with a house of two rooms; 2 squares of land prepared for planting, with seed and implements of agriculture, for $100 per square, payable with interest in fifteen annual payments, to be paid in the first three months of each year. The titles to the property are to be made out after the final payments. The bank will also loan to colonists from $400 to $500 at 10 per cent per annum. The population of the colony for the year 1890 was 13 families, consisting of 60 persons, who are successfully engaged in the cultivation of coffee, sugar cane, tobacco, pineapples, corn, etc.

Five Lille.—This colony is located in the department of San Pedro and in the neighborhood of the colony of New Germany. The inhabitants are engaged in cutting timber for exportation. The grant comprises 18 square leagues, consisting of forests of fine woods and "camp."

Villa Sand.—This colony was established by, and belongs to, Mr. Valentin, and is situated on the River Aquadaban, in the department of San Salvador, 15 leagues from the River Paraguay. The inhabitants are engaged in agriculture and stock-raising.

Canstatt.—This colony, which takes its name from its founder and proprietor, is situated in the department of Ibitimi. Several colonists have established themselves there, with more to follow. To each family is given 4 squares of land, two oxen, and the necessary farming implements free. They can rent a pasture for grazing at the rate of 25 cents per head of animals. Once the colonist has cultivated the 4 squares that he obtains

the proprietor will sell them lots of equal dimensions at the rate of $5 per square, payable in two years. Sugar cane is grown and machinery for distilling purposes is used; tobacco, corn, mandioca, and peanuts are also grown.

The colonies of New Viginia and San Salvador, private property, are in a state of formation.

According to statistics of the immigration office, the arrival of immigrants from 1881 to 1890, inclusive, has been as follows:

Year.	Number.	Year.	Number.
1881	26	1886	101
1882	278	1887	564
1883	207	1888	1,063
1884	287	1889	1,492
1885	63	1890	1,419

PUBLIC DEBT.

In the early part of the current year an issue of bonds was made for the sum of $500,000 paper currency. Since that date about $300,000 has been retired from circulation, leaving a home debt of $200,000 at the present time. These bonds draw 1½ per cent monthly. They have been frequently called in, but the holders prefer to keep them.

The foreign debt on the same date stood as follows:

Brazilian claims	$8,960,183.23
Liquidated interest on the same	916,283.21
Argentine claims	7,770,569.63
Interest due December 31, 1890	1,793,420.44
Loan from the Argentine National Bank	42,589.60
Conversion of the London loans	4,155,500.00
Total	23,638,546.11

By the arrangement of the English debt in December, 1885, it was reduced to £850,000 in bonds of £100 each, which in dollars represents $4,250,000; of this amount £11,000 are still held to the credit of this Government, leaving $4,195,000; from this sum is to be subtracted $39,500, the value of one hundred and fifty-eight old bonds or seventy-nine new ones bought by the amortization fund, leaving a present debt of $4,155,500. The interest is promptly met. An amortization fund having been started with the overplus remittances made to England, sixty-eight bonds have been purchased with this fund. At the time of the rearrangement (1885) it was agreed that the Paraguayan Government should make over to the bondholders 500 leagues of land, to be chosen by a representative of the bondholders from the then existing Government lands. Mr. Henry Valpy was sent out from England with this object in view, selecting the best lands he could find, of which nearly all are duly legalized by Government titles. This choice was approved by a majority of the bondholders.

The Brazilian and Argentine debts are in much the same position which they were in January, 1888, by which it will be seen that the interest of these debts has not been taken into account since the year mentioned.

The Paraguayan debt, both foreign and domestic, is, perhaps, proportionately the smallest of any country in the world, and if the Argentine Republic, the only market Paraguay has for her exports, was in a more flourishing condition it would be looked upon as a fairly prosperous country. The Argentine market entirely rules this in every respect, and until its affairs assume a more favorable aspect Paraguay will remain much the same.

The Paraguay Land Company, formed by the English bondholders, was incorrectly named, there being in existence at that time a company of that name. It was afterwards changed to the Anglo-Paraguay Land Company. The original Paraguay Land Company, formed in connection with the Paraguay and River Plate Bank, has concluded its payments on lands bought from this Government, and now holds very fair properties.

CATTLE AND STOCK RAISING.

It will be seen from the following table that in 1877 the number of horned cattle was very few, being about 200,525. In the next nine years the increase was very rapid, and in 1886 Paraguay contained 729,796 head. The increase from 1886 to 1890 has been steady, and the official returns place the total number of horned cattle for the year 1890 at 861,954. Not only have horned cattle increased rapidly, but also horses, mules, sheep, and goats. Asses and hogs are slightly on the decrease. It is claimed by many good authorities that the country is unsuitable for hog-raising, owing to the extreme heat. Cattle thrive extremely well; they fatten quicker and attain a much heavier weight than those in the Argentine Republic, a result attributable, perhaps, to the better grass and more shelter.

The following table shows the increase of stock for the years 1877, 1886, and 1890:

Animals.	1877.	1886.	1890.
	Number.	*Number.*	*Number.*
Cattle	200,525	729,796	861,954
Horses	21,140	62,386	99,693
Mules	1,299	1,925	2,433
Sheep and goats	6,668	32,351	77,576
Asses	1,500	2,239	2,188
Hogs	3,026	12,250	10,778
Total	234,158	840,947	1,054,622

MANUFACTORIES.

The manufactories of Paraguay consist of four brick factories, two match factories, two tile factories, four furniture factories, two tanyards, five liquor factories, two steam flour mills, two steam soap factories, five steam distilleries, two steam macaroni factories, two breweries, one artificial ice factory, and two steam sawmills.

The soap manufactured supplies the trade, and the remainder is exported to the neighboring provinces.

The men throughout the country make very intricate puzzle rings of gold, silver, and copper, and the women produce large quantities of handkerchiefs and embroidery of Ñanduty lace, for which Paraguay is so famous. The potteries of Itá turn out large numbers of clay articles, which are very curious as well as useful. Towels, hammocks, rope, etc., made of native material at Areguá also find a ready sale. In Areguá, on the railway, is a factory for the production of essence from oranges, which has been very successful.

FRUITS.

The cultivation of fruits in this country is an industry that has been wholly neglected; with one or two exceptions no attention has been paid to the improved methods of this industry. The soil is one of the best adapted for that purpose, being light and porous, with plenty of moisture. It has been said and demonstrated that the cultivated fruits grown are excelled by none in the world for richness and flavor.

Oranges.—The oranges of Paraguay will compare very favorably with those of Florida and California in size and flavor. The tree begins to bear at the age of 5 years and continues indefinitely. There are thousands of these trees which are known to be over 60 years of age, and they seem to be as prolific as ever. Large groves are scattered all over the country, and millions upon millions of the fruit fall to the ground and rot for want of a market or facilities of transport. The following table will show the export of oranges for the last five years:

Years.	Number.	Value.
1886	32,482,000	$64,805
1887	36,520,000	68,306
1888	42,800,000	70,100
1889	52,350,000	75,740
1890	65,000,000	81,120
Total	229,152,000	360,071

Grapes, bananas, etc.—Since the time of the Jesuits grapes have not been cultivated to any great extent, but they would thrive and produce a large crop if cultivated. Bananas and pineapples are grown in large quantities, and, although small, are of an excellent flavor. Among the principal fruits might be mentioned pomegranate, quince, pear, peach, papaw, pineapple, and a large variety of native fruits which are very nutritious and rich in flavor; watermelons and muskmelons are numerous and of very good varieties.

AGRICULTURE AND PRODUCTS.

The following table shows the comparison of land in cultivation during the years 1863, 1881, and 1888:

Products.	1863.	1881.	1888.
	Acres.	*Acres.*	*Acres.*
Maize	349,000	206,000	58,000
Mandioca	110,000	120,000	41,400
Tobacco	23,000	10,000	16,000
Sugar cane	25,000	20,000	7,100
Cotton, rice, etc.	43,000	46,000	30,208
Total	550,000	402,000	152,700

The following is a statement of the number of lines of 100 yards planted in the year 1890:

Products.	Lines of 100 yards.	Products.	Lines of 100 yards.
Cotton	61,317	Peanuts	349,425
Rice	180,336	Coffee plants	33,966
Beans	1,249,983	Sugar cane	430,969
Lucern	93,561	Mandioca	3,423,234
Tobacco	912,918	Potatoes and vegetables	262,570
Maize	3,995,060		

There were 9,130 squares of tobacco planted, producing 821,700 arrobes, and the amount exported in 1890 was 615,310 arrobes, leaving for home consumption 206,390 arrobes. In consideration of the sum loaned by the banks to agriculturists and the high prices that this article attained in 1891, the latter have devoted themselves especially to its cultivation, and, unless some unexpected misfortune happens, this year's crop will not be less than 1,200,000 arrobes, which represents an approximate value in gold of $2,000,000.

YERBA MATE, OR PARAGUAYAN TEA.

The extent of the forests of Paraguayan tea owned by the Industrial Paraguaya in the departments of Concepcion, San Pedro, San Estanislado, Igatimi, and Tucurupucú consists of 400 square leagues, according to titles of purchase and the surveys of Real de Oliveira and Santiago Rivas. The production for the present year will not be under 450,000 arrobes and the yerbales the company own are capable of producing 500,000 arrobes. The entire output of the yerbales for the year 1890 will be about 800,000 arrobes, and it is estimated that 1,000,000 arrobes can be gathered yearly. The average price for the tea in the present year is $5 per arrobe. The total production represents a value of $4,000,000.

The Industrial Paraguaya, with 400 square leagues of forest, produce nearly 500,000 arrobes. The 1,000,000 arrobes which are calculated as the maximum output yearly should represent, without fear of committing an

error, the existence of yerbales to the extent of 800 square leagues. Every year new *ranchos*, or tea deposits, are found, and it may be safely stated that the extent of the yerbales or forests of Paraguay was 1,000 square leagues at the close of the year 1890.

CARAGUATÁ.

This fibrous plant abounds and grows spontaneously in every part of the Republic of Paraguay. The fibrous substance is in the long, thick leaves, and not in the bark, as in the jute and ramie. The leaves of the plant are armed at every point with sharp-pointed needles, which render them difficult to handle.

In the year 1879 Messrs. Branlio Artecona and Louis L. Lenguas made experiments with this plant with machinery they built in the departments of Arroyos and Esteros, having obtained from the Government a concession for fifteen years for the free manufacture and exportation of this product. The experiments did not give satisfactory results, owing to the employment of inexperienced hands and unsuitable machinery, so, after a few months, the work was abandoned.

In 1889–'90 Mr. Artecona again attempted its manufacture. The Tejidora Company, of Buenos Ayres, agreed to take all the product he could turn out. He shipped about 400 tons, which were sold to good advantage, but, owing to the same reasons that existed in 1879, the company again suspended operations. Last year samples were shipped to European experts, and gave excellent results. On a larger quantity being shipped, owing to imperfect packing, it fermented on the voyage and arrived in a worthless condition.

The interest that has been awakened in England, France, and Germany by this product makes it merit a most serious study, and there is no possible doubt but that the best results would be obtained if the product could be worked with competent hands and proper machinery.

EDMUND SHAW,
Consul.

UNITED STATES CONSULATE,
Asuncion, December 14, 1891.

AFFAIRS IN GIBRALTAR.

REPORT BY CONSUL SPRAGUE.

NAVIGATION.

The navigation of this port has not undergone any material change during the past quarter.

I have, however, to record an important addition that has recently taken place in its steam communication direct with New York, by the North German Lloyd Steamship Company having lately opened a new service of steamers from New York to Genoa, Italy, via Gibraltar, and *vice versa*.

This line only takes cargo for Genoa from New York and merely stops at this port to land or receive passengers. So far passengers, especially those of the first class, speak highly of the comfort and accommodation afforded by this line, which will offer a strong inducement to American tourists who cross the Atlantic expressly to visit the southern towns of Europe. Although but recently established, quite a number of American tourists have already arrived at this port on their way to Tangier, Algeria, and Spain to pass the winter. These German steamers, besides registering about 3,000 tons and being favored with exceptional discipline on board, may be considered very fast, having already made the passage in eight days between New York and this port, which is regarded as unprecedentedly short and in every respect a great improvement upon the means hitherto available. In an economical point of view, also, the advantages are greatly in favor of passengers in general. The steamers at present employed in these transatlantic trips are the *Fulda* and *Werra*.

The following table shows the list of foreign steamships that have called at the port of Gibraltar bound to the United States, with the number of passenger emigrants on board, during the quarter ended the 31st of December, 1891:

Vessel.	Date.	Whence.	Destination.	Passengers.
				Number.
British steamship Italia	Oct. 3	Sicily and Naples	New Orleans	861
British steamship California	Oct. 8	Naples	New York	626
British steamship Elysia	Oct. 27	do	do	228
Italian steamship Entella	Nov. 7	Sicily	do	388
German steamship Fulda	Nov. 13	Genoa	do	201
Italian steamship Po	Nov. 17	Sicily	New Orleans	342
British steamship Bolivia	Nov. 26	Sicily and Naples	New York	470
Italian steamship Iniziativa	Dec. 3	Sicily	do	214
British steamship Victoria	Dec. 15	Sicily and Naples	do	310
Italian steamship Plata	Dec. 17	Sicily	do	79
German steamship Fulda	Dec. 18	Genoa	do	173
British steamship Anglia	Dec. 28	Sicily and Naples	do	182
Total				4,074

AMERICAN PRODUCE.

The demand for Kentucky and Virginia leaf tobacco continues to be quite limited, for the reasons already stated in previous reports. What is now imported direct from the United States is mostly for account of the retail dealers established in this market.

Refined petroleum still figures as one of the principal articles of sale here, coming direct from New York. This trade is at present controlled by three or four importers here, who keep the market well supplied.

A fair business is doing in flour, the demands for which are being chiefly met by direct importations from New York by steamships. It is likely they will increase so long as cereals and breadstuffs in general continue in active demand and prices be sustained in the leading markets of Europe.

Table showing the flour imported in 1890 and 1891.

Whence imported.	1890.		1891.	
	Number of packages.	Equivalent in sacks of 280 pounds.	Number of packages.	Equivalent in sacks of 280 pounds.
Great Britain	27,146	27,146	22,901	22,901
United States	10,265	5,132	15,447	7,420
France	7,512	5,750	5,287	4,541
Algeria	100	79	57	45
Total	45,023	38,107	43,692	34,907

The decrease in the importations of flour during 1891, as compared with 1890, is due to less demand from the neighboring Spanish district, where the duties on foreign breadstuffs have increased.

Owing to the failure of the Russian crops and consequent rise in prices in Europe, the importations from the United States increased during the last months of 1891.

COAL TRADE.

The following table shows the sales of coal at the port of Gibraltar during the year 1891 for the use of steamships, with the exception of the quantities supplied to the British steam war ships:

Month.	Quantity.	Month.	Quantity.
	Tons.		*Tons.*
January	33,891	August	24,182
February	26,344	September	35,014
March	37,035	October	30,129
April	38,405	November	36,297
May	31,949	December	37,011
June	34,176		
July	27,940	Total	392,373

MILITARY MOVEMENTS.

Since the 1st of November last the British military, with their families, as also the British navy people, are permitted, under a few restrictions, to ascend the rock and signal station. This privilege, however, has not been extended to the civil population or natives of Gibraltar, nor to strangers visiting this fortress—a circumstance which has been generally resented, especially among the British residents, who consider themselves as most loyal subjects of Her Britannic Majesty.

Gun practice has already commenced with the new pieces of ordnance mounted on the different fortifications lately erected on several elevated positions of the rock, and seems to give some unsatisfactory results, owing to the insecurity of the anchorage, which is either in sands which are incessantly shifting or on rock, so that the targets are constantly shifting with the strong currents, preventing the possibility of taking accurate aim.

The garrison has lately undergone some changes, two regiments stationed here for several years past having been relieved by two others consisting of riflemen and light infantry. The men lately arrived appear to be healthy looking, though the majority are recruits and have a very boyish appearance. They are favored with a staff of excellent noncommissioned officers, who seem to be well trained and selected for the demands required of them. Probably when these young soldiers will be considered in a fit condition to take the field on any foreign campaign they will have the privilege of relinquishing a military life, since the present British army regulations will admit of it.

Evidently the British Government now looks more to having the mother country defended by her most efficient soldiery, as the rule seems to be to send recruits to her various colonies, where they gradually become acclimated and ultimately prove good soldiers.

England is leaving the internal defense of her important colonies in a great measure to native resources, greatly depending upon their loyalty and the presence of her powerful navy, which can always be found in the immediate vicinity of her numerous foreign possessions.

HORATIO J. SPRAGUE,
Consul.

UNITED STATES CONSULATE,
Gibraltar, January 2, 1892.

ELECTRIC LIGHTS AND MOTORS IN LIMA.

*REPORT BY CONSUL DAUGHERTY, OF CALLAO.**

The electric-light plant in use at Lima is the Thomson-Houston system, and is under the control of the Lima Gas Company. The company supplies one hundred and thirty-five arc lamps and two thousand incandescent lamps. Electricity is not used for lighting in any other part of Peru, so far as I am informed, but it is reported that the city council of Arequipa are now considering the subject of introducing electric lighting there.

The city of Lima has over 20 miles of street railways, upon which thirty cars are drawn by horses and mules. The name of the company operating these roads is the Empresa de Tranvias, and it is reported that negotiations are under way for the equipment of these roads with electric motors.

It is also reported that other negotiations are being considered for the use of electricity for lighting and other purposes in Callao, Mr. John Harris, of this city, being largely interested therein.

A. J. DAUGHERTY,
Consul.

UNITED STATES CONSULATE,
Callao, December 15, 1891.

* For the information secured, as given herewith, I am indebted to Mr. Percy Burbank, a citizen of the United States now residing in Lima.

CATTLE DISEASE IN KOREA.

REPORT BY SECRETARY OF LEGATION ALLEN, OF SEOUL.

Korea is well supplied with an excellent breed of cattle. The animals are of great size, well formed, and usually of a light tan color. The use of milk seems to be unknown, and no cows are kept for this purpose, except by the foreigners, who pronounce them to be good milkers. The cows are used mostly by the farmers for plowing, etc., or are confined to certain sections. The bulls not castrated are used principally as beasts of burden, and occupy the roads. They are either harnessed tandem to a heavy cart, with the yoke connecting the ends of the shafts resting on the neck of one, or, fitted with pack frames, they bear heavy loads.

These bulls are seldom vicious; they are kept so constantly at hard work and mingle so freely with the crowds of men, ponies, etc., in the roads that, in the absence of cows, they are quiet enough.

Considerable meat is used in the food of the people, and, in addition to the worn-out bulls that are sold to the butcher, good, fat, young animals are regularly killed, the butcher's trade being a recognized and lucrative calling. As native taste is opposed to the removal of more blood from the meat than is necessary, the animal is not bled, death being caused by strangulation by means of a pointed pole forced into the air passages.

Several foreign capitalists, attracted by the magnificence of the cattle, the excellent climate, and cheap lands, have conceived the idea at various times of establishing a cattle ranch and dairy farm here for the purpose of supplying the markets of the Chinese and Japanese ports with fresh beef and dairy products; but, on investigation, the scheme has been deemed impracticable, because of an endemic, and at times epidemic, disease, which is very destructive to the cattle and which would work great havoc in a confined herd.

Every summer this disease prevails to a certain extent throughout the peninsula, and nearly every year it is epidemic in some province or section. The past season has witnessed an unusually severe visitation in the neighborhood of this capital. Transportation is so delayed in consequence that it costs $3 per ton to get coal from the mines into the city, a distance of from 2 to 3 English miles. The people are using human labor in plowing for their winter wheat, it being a not uncommon sight at present to see four men hitched to a plow doing the work of a bull. Many fields will not be plowed. The crops raised on those plowed in this feeble way must be light, and, as the individual surplus is seldom great, considerable distress must result. Meanwhile the man who has heretofore made his living as a freighter will be at a loss to support his family during the winter without the aid of his bull. At present for some 50 miles (English) out from this city the roads are lined with the carcasses of the cattle that have died on the way; for the owners, in their improvident manner, usually continue to urge them

on even after they have shown signs of sickness, and only cease when the faithful beast falls down unconscious. The meat is not used as a rule, it being considered dangerous to man, though I can learn of no authentic case where death has resulted from using the meat. No small portion is used in certain localities by the very poor, while along the roads crowds of howling dogs may be seen devouring the half-buried remains of beasts that have so died. The hides are saved, as the bones will be later on, these articles being among the regular exports of the country.

The disease, sometimes called cow cholera by the people, seems to be an enteric fever, with severe intestinal catarrh, resulting in an inflammatory degeneration of the liver, and is brought about through the use of filthy water containing excrementitial and decomposing vegetable matter.

The onset of the disease is as a severe diarrhea, during which the beast is kept at its laborious work in the excessive heat, and, if the discharges are contagious, the roadside brooks generally soon become infected and all the animals in the district are liable to become affected in consequence.

Ordinarily the disease runs on for four or five days, till the bull's ears droop, his sight fails, and he staggers and falls by the roadside, arising when relieved of his burden and eagerly taking water, but usually dying soon after having reached this stage.

On post-mortem examination the lungs are found to be spongy and discolored, due, no doubt, to the smoking the animal has been subjected to before death; the abdomen is enormously distended with gas, and the coats of the stomach and intestines are very dry. The liver seems to be the chief seat of the trouble, being infiltrated with pus, easily broken down, and more or less enlarged; the gall bladder, owing to the stoppage of the duct, being enlarged to almost the size of a man's head, but containing no calculi. I am unable to say if the rupture of this sac is the cause of the many cases of sudden death; it may be. The great change in the loins, and especially the enlargement of the gall bladder is observed by, and is well known to, the natives, who believe that if they could have a medicine that would remove this bile the beast would get well.

The only remedy of any value, apparently, is a change to mountain air. A provident owner will at once drive his animal high up the mountain side on the first approach of the disease, the pure water doubtless having more to do with the cure commonly resulting from this course than anything else. Generally, however, the customary carelessness permits the animal to go on to the last stages before anything is done for its relief, the chief resort at this stage being the burning of damp straw under the beast's nostrils as it gasps for breath, a remedy so disagreeable that even a dying bull resents it and shows some signs of life in its attempts to move from the offensive smudge.

H. N. ALLEN,
Secretary of Legation.

UNITED STATES LEGATION,
Seoul, October 20, 1891.

ACAPULCO-AMERICAN TRADE IN 1891.

REPORT BY CONSUL M'CASKEY.

Table showing imports from the United States.

Articles.	Value.	Articles.	Value.
Arms	$2,000	Oil:	
Axes	2,700	Boiled	$200
Ammunition	500	Olive	150
Beer	2,000	Olives	100
Bags	1,350	Oars	200
Coal oil	1,000	Powder	700
Crockery	500	Potatoes	1,000
Cartridges	2,000	Paints	400
Candles	1,100	Paper	1,400
Canned goods	700	Pastes	500
Cement	450	Pumps	400
Crackers	1,000	Pianos	1,200
Drugs	2,700	Photographic material	200
Dry goods	2,200	Printers' material	500
Duck	300	Raisins	300
Electric goods	100	Rope	400
Furniture	700	Rosin	100
Flour:		Soda	300
Corn	225	Sago	300
Wheat	1,200	Sewing machines	1,500
Feed cutters	100	Starch	300
Green fruit	200	Stoves	500
Groceries	3,000	Scales	150
Glassware	500	Sulphur	50
General merchandise	2,000	Spices	300
Ginger ale	200	Stationery	700
Hams	400	Tinware	300
Hardware	5,500	Tea	150
Iron	800	Tar	100
Leather	200	Varnish	300
Lumber	3,000	Whisky	300
Lamps	900	Wine	2,000
Machinery	1,500	Wire	1,000
Matches	150	Articles not named above	1,279
Nails	1,000	Total	60,654
Oakum	200		

Table showing exports to the United States.

Articles.	To—	Value.
Fresh fruits in boxes	San Francisco	$52,597.57
Skins in bales	do	735.69
Sesame seed in bags	do	1,700.00
Dry hides in bales	New York	28,767.69
Rubber in boxes	do	690.70
Total		84,491.65

Table showing the navigation at the port of Acapulco for the year ended December 31, 1891.

ENTERED.

Flag.	From—	Steamers.		Sailing vessels.		Total.	
		No.	Tons.	No.	Tons.	No.	Tons.
United States	San Francisco	37	65,188	.....	.....	37	65,188
Do	Panama	52	88,555	.....	.....	52	88,555
Do	Nanaimo, British Columbia	2	3,028	.....	.....	2	3,028
Do	Newcastle, New South Wales	.....	.....	1	1,224	1	1,224
British	Cardiff	.....	.....	3	4,544	3	4,544
Do	Liverpool	.....	.....	2	2,239	2	2,239
Do	Newcastle, New South Wales	.....	.....	2	2,471	2	2,471
Danish	Liverpool	.....	.....	3	3,186	3	3,186
Do	Manzanilla, Mexico	.....	.....	1	206	1	206
German	Cardiff	.....	.....	1	711	1	711
Do	Newcastle, New South Wales	.....	.....	1	673	1	673
Do	Salina Cruz, Mexico	1	821	.....	.....	1	821
Chile	Lodu mines	1	1,000	.....	.....	1	1,000
Mexico	Tonala, Mexico	1	21	.....	.....	1	21
Do	Mexican coast	.....	.....	14	585	14	585
Total		94	158,613	28	15,939	122	174,552

CLEARED.

Flag.	To—	Steamers.		Sailing vessels.		Total.	
		No.	Tons.	No.	Tons.	No.	Tons.
United States	San Francisco	42	69,881	.....	.....	42	69,881
Do	Panama	48	86,682	.....	.....	48	86,682
Do	San Diego	1	208	.....	.....	1	208
Do	Valparaiso	.....	.....	1	1,224	1	1,224
British	Cardiff	.....	.....	3	4,544	3	4,544
Do	Liverpool	.....	.....	2	2,239	2	2,239
Do	Newcastle, New South Wales	.....	.....	2	2,471	2	2,471
Danish	Liverpool	.....	.....	3	3,186	3	3,186
Do	Manzanilla, Mexico	.....	.....	1	206	1	206
German	Cardiff	.....	.....	1	711	1	711
Do	Newcastle, New South Wales	.....	.....	1	673	1	673
Do	Salina Cruz, Mexico	1	821	.....	.....	1	821
Chile	Lodu mines	1	1,000	.....	.....	1	1,000
Mexico	Mexican coast	.....	.....	16	790	16	790
Total		93	158,592	30	16,044	123	174,636

We have had twenty-five calls from men-of-war during the year.

JAMES F. M'CASKEY,
Consul.

UNITED STATES CONSULATE,
Acapulco, January 15, 1892.

THE GERMAN VINTAGE FOR 1891.

REPORT BY COMMERCIAL AGENT SMITH, OF MAYENCE.

With respect to the vintage on the Rhine of the present year, I have to report that in quantity it is exceedingly meager, the yield of grapes being the smallest harvested for some ten or twelve years past, and that the quality will also be inferior, say of medium character, though it is yet too soon to say with certainty just what the product of the year will turn out to be, as some five or six months are always necessary from the time of the ingathering of the grapes for the wine to be sufficiently matured for accurate judgment. The product of the present year, there can be no doubt, however, will need a good deal of manipulation with sugar, etc., to make it acceptable. The average vintage this year in quantity is reckoned for both the Rheingau and Rhein-Hessen at about one-eighth of a full yield, which is a very modest and unsatisfactory return and will have to be classed among the worst of the century.

The must weights around Rüdesheim (Rheingau) ran this year, I am informed, from 75° to 103° Oechsle, against 78° to 96° in 1890, which is considered somewhat extraordinary, as the amount of sugar contained in the various musts, according to analyses made by Dr. Schmidt, of Wiesbaden, ranged from 18.5 to 21 per cent, against 19.5 to 22 per cent in 1890, showing that the musts of 1890 contained more saccharine matter than those of the present year. The acidity was 8.3 to 10.6 per cent, against 6.3 to 8.8 per cent in 1890. The conclusion can therefore readily be drawn from these results that the wine of 1891 will be much inferior to that of 1890, which was no remarkable wine itself in quality.

In Rhein-Hessen the vintage was relatively bad. The wines of this district, as is well known, rank much below those of the Rheingau in public esteem. About 70° Oechsle was the must weight here, on the average, with amount of sugar ranging from 50 to 90 per cent. The acidity averaged 9 per cent, running from 6 to 12 per cent.

The vintage of 1890 amounted in quantity to two-thirds of a full vintage, and the wine obtained, while not up in quality to the esteemed wines of 1884, 1886, and 1889, was a good table and medium wine of slight acidity and pleasing taste. The greater part of this wine is said to be still in first hands.

The crops in Germany have in general been very disappointing this year, and wine is no exception to the rule. Poor crops, dull trade, and high prices for food is the experience of Germany this year, and it is hoped the coming year will bring a marked improvement.

It has been some twenty years since the wine-growers of the Rhine had A 1 crops in both quality and quantity, and their hope that each year as it opens upon them may bring a bountiful harvest of rich, golden, sugary grapes is doomed over and over again to disappointment. Fine wines are

from time to time obtained in particular localities or by careful selection of the grapes, but since the sixties there has been no general crop of grapes that ranked as A 1, and the wine cellars are very much in need of a new supply of such wines as those of 1865 or 1868.

The grapes this year have in some instances been so small and hard from undevelopment that it was a common saying during the vintage that you could shoot sparrows with them.

In poor years the wines of the Rhine and Moselle have to be improved by blending and by the addition of sugared water. This is really contrary to the German law on the subject of the adulteration of foods and drinks, but has to be quietly done, nevertheless, as an absolute necessity to make the lower grades of wine at all drinkable. In blending it has been customary in past times to use the milder wines of the Palatinate and Haardt, but these wines are now so high in price from a scarcity of good wine through poor vintages for a series of years that it does not pay well to resort to them in improving Rhine wines of inferior vintages. By the new commercial treaty with Italy the duty on Italian wines will be somewhat reduced, and, as these wines are cheap and certain of them well adapted to mixture with wines of Germany, it is probable that much recourse will be had to them in future for blending with German wines and for making light red wines through a combination of Italian red with white Rhine wines. The Rheingau yields of good years have nothing to fear, it is said, from competition with Italian wines; and in poor years it will be to their advantage to be blended with them, their value being raised by union with the white wines of Italy.*

In concluding the new series of commercial treaties Germany has recently been busy with, it was necessary in perfecting a treaty with Italy to make important concessions to that country in respect to wine, which is one of its great articles of export, otherwise no basis for a treaty could have been arrived at, it is said; and the arrangement of this concession formed one of the most difficult points in the negotiation of the new treaties. On the part of Italy it was of vital importance that her wine trade, which had received severe injury in the recent tariff war waged between France and that country, should meet with special favor from Germany and find in this Empire the market which had been largely lost in France. Wine, I believe, is, next to silk, Italy's chief article of export; and the decline of its exportation to France from 2,782,707 hectoliters† in 1887, the year before the tariff contest with that country began, to 19,234 hectoliters in 1890, was a tremendous drop, which Italy naturally would seek to make good elsewhere.

It was seen that Germany might, by discrimination, give Italy an advantage over France and take a good deal of Italy's superfluous wine, and thus in a measure repair the damage inflicted upon Italy by France without doing injury to her own wine-growers. But how to favor Italy without at the same

*This blending, however, is to take place only under Government supervision.

†1 hectoliter = 26.42 gallons.

time opening the door to French wines was a perplexing question, as France, under a most-favored-nation clause in treaty stipulations, would be entitled to all the privileges of the most-favored nation. Germany did not propose to make importation so easy to Italy that her own wine-growers would meet with keen competition or be overwhelmed by importations encouraged from France to the disadvantage of both herself and Italy, so, as Italy's wines are inferior, rough wines, largely adapted to blending, while the French are of a different character, it has been provided that what the Germans term "Verschmitt" wines, that is, wines for mixing with others, shall be admitted from Italy at 10 marks a meter centner (220 pounds), instead of at the rate of 24 marks, the duty they have been paying. By this arrangement the cheap Italian wines will get into Germany at a low rate of duty, to the exclusion of the finished products of France, and enable Italian exporters to hold the German market against all but the finished French wines of high class, and a very serious blow will be struck at the French wine trade.

It is provided, too, in Italy's interest that wine for cognac shall be admitted at 10 marks a meter centner. This is also a desirable admission to German cognac distillers, without harming the German wine industry.

All other wines in casks are to be admitted at 20 marks ($4.76) per meter centner under the treaty, instead of at 24 marks, as formerly. This is a concession in which France must also share, and it will be somewhat objectionable to German wine-producers, but from 1868 to 1879 the duty on wine was only 16 marks ($3.80), without perceptibly affecting German interests for evil.

In the matter of wine-drinking, Germany can be divided into two parts—into the wine-growing portion, where the use of German white wine prevails, and the nonwine-growing, comprehending the northern and eastern sections of the Empire, where it is customary in drinking to use red wine, principally French. In the latter some of the fine native growths of white wines from the Rhine, Moselle, Palatinate, and Alsace are, of course, drank; but the great bulk of the wine consumed is red, professedly from French grapes, but in large part—in the case of the cheaper grades—suspected to be composed of everything but the juice of the French grapes. There is a demand for cheap, light, natural red wines, which, it is thought, can largely be supplied by a blending of Barletta or other Italian red wine with the sourer, poorer sorts of German white wines in the proportion of 1 quart of Italian red wine to from 2 to 3 quarts of German white wine, obtaining thereby a red wine preferable to the great body of what is now sold as cheap French red wine, which is generally conceived to be a manufactured article, and such is the great aim of the treaty. It is also hoped that the consumption of brandy, which in certain parts of Germany is much indulged in, will be lessened by placing cheap wine within the reach of the people.

Germany is, after all, not a great wine-drinking country when compared with other European states, the French consuming more than seven times as much per capita as the Germans. Published statistics represent the different

European countries as drinking the following quantity of wine annually per head of population:

Country.	Quantity.	Country.	Quantity.
	*Liters.**		*Liters.**
France	95½	Portugal	60½
Italy	78½	Austria-Hungary	35⅛
Spain	61 7/10	Germany	12½

*1 liter=1.05 quarts.

The better class of Germans are accustomed to a plentiful supply of wine; but the middle and working classes, taking the Empire as a whole, have not been in the habit of freely using it, on account of its expensiveness, and have resorted to beer and brandy instead.

Germany is also a small producer of wine, the amount of wine produced in the Empire from 1884 to 1888 having amounted to only 2,300,000 hectoliters on the average per year; and its wine-growing area must ever be a limited one, owing to its northern situation and the unfavorableness of soil and climate to grape-raising on an extensive scale.

Italy is now represented to be the greatest wine-growing country of the world. France, through the dreadful ravages of the phylloxera, has had its annual average production of native wine considerably lessened, so that it stands now next to Italy in the amount of wine yielded by its vineyards.

JAMES H. SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, December 30, 1891.

THE CANADIAN CRUISER "CONSTANCE."

REPORT BY COMMERCIAL AGENT PRÉFONTAINE, OF COLLINGWOOD.

As of probable interest to American shipbuilders, I have the honor to forward herewith some statistics concerning the revenue cutter, or Canadian cruiser, *Constance*, recently launched at Owen Sound. The length on the water line is 118 feet; over all, 125.1 feet; draft of water, 10 feet aft and 8.6 feet forward; depth of hold, 11.3 feet. She is constructed with what is known as the "ram stern." She is to be propelled by steam, with the addition of two leg-of-mutton sails of 40 feet hoist and 30 feet on the foot. Her engines are compound, with a capacity of 115 to 120 revolutions. Her expected speed is 13 to 14 knots an hour. She is of the composite construction—all steel, with the exception of the keel and the bottom, which are planked to about the light-water mark. The *Constance* is constructed to carry three guns on each quarter and one on the forward deck, but the size is not specified in the plan examined. Her engines and boilers

are protected by a case of quarter-inch sheet of steel, leaving a space between it and the side of the ship to be used as coal bunkers. The thickness of the plates of the *Constance* is three-fourths of an inch.

This boat, as well as I can find out, was built for the marine and fishery department of the Canadian Government, but has been transferred to the customs department to be used on the Gulf of St. Lawrence. This information is verified by the following extract from the Citizen (the official organ), of December 11, 1891:

A NEW CRUISER.

The necessity for a better means of preventing smuggling operations in the lower St. Lawrence than the resources at the command of the Quebec customs service afforded led to the new Government steamer recently launched in Owen Sound being selected for the work. She was built for the fishery protection service on the great lakes, and to supply her place the minister of marine has decided to have another swift vessel built this winter. The new one will be of steel throughout, rather than a composite ship, as was the *Constance*, and will also have a lighter draft and of necessity a greater beam. This will enable her to navigate with safety the shallow waters in which the fishermen of the lakes ply their calling.

As her commander has not yet been appointed the number of her crew can not be ascertained, but she carries accommodation for fifteen men.

HERMEN PRÉFONTAINE,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Collingwood, January 12, 1892.

Census of British Guiana.—I have the honor to transmit herewith a printed copy, received this day, of the decennial census of this colony, from which it will be seen that the population thereof at midnight on April 5, 1891, was 278,328, to which an estimated aboriginal population of 10,000 has been added, making a total of 288,328. The city of Georgetown has 53,176, of which 8,839 are white, or, as the report states, 2,873 Europeans and 5,966 Portuguese.—PHILIP CARROLL, *Consul, Demerara, December 19, 1891.*

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O

REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 139—APRIL, 1892.

LOCAL TRANSPORTATION AND UNDERGROUND CONDUITS.

ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE.
ALL REQUESTS FOR THESE REPORTS SHOULD BE ADDRESSED TO THE SECRETARY OF STATE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

CONSULAR REPORTS

ON

LOCAL TRANSPORTATION

IN

FOREIGN CITIES, ETC.

No. 139——1.

LOCAL TRANSPORTATION CIRCULAR.

DEPARTMENT OF STATE,
Washington, April 30, 1891.

To the consular officers of the United States.

GENTLEMEN: You are instructed to make a report on local transportation in the principal cities in your respective districts, to be printed in the CONSULAR REPORTS for the information of the municipal governments and the people dwelling in cities of the United States.

The report should cover the following points of inquiry:

(1) What systems of public transportation, namely, omnibuses, horse cars, tram cars, electric cars, or steam cars, are employed for urban and suburban transportation in your consular districts?

(2) Are these owned by individuals or corporations, or by the municipality?

(3) What are the rates of fare charged, and how are these rates controlled by distance?

(4) Does the municipality obtain from corporations that it does not own any return for the use of the franchise that it grants to them, that is, in the way of taxes, shares in the profits, or any monetary return whatsoever?

(5) Are these charges made for transportation in any way determined by the local authorities, and do they compel the transportation corporations to perform services which they would not undertake except under compulsion?

(6) Are the facilities afforded satisfactory to the people, and are they financially profitable to those engaged in the business of supplying them?

I am, etc.,

WILLIAM F. WHARTON,
Assistant Secretary.

CONTINENT OF EUROPE.

AUSTRIA-HUNGARY.

PRAGUE.

REPORT BY CONSUL RUBLEE.

Local transportation is effected in the city of Prague exclusively by means of street cars, which traverse the city in several directions, communicating with its various suburbs and making almost any point accessible by a system of transferring. The street-car system came into operation in 1875, prior to which time omnibuses supplied the means of communication, but they have entirely disappeared since then. Steam cars can not be said to be in use for urban or suburban transportation, inasmuch as the demand for any such service amounts to little or nothing.

The street-car plant of Prague is owned by a Belgian capitalist, Edward Otlet, and the management is in the hands of his representatives. The franchise obtained from the city extends for a period of fifty-one years, and the owners in return pay a tax during the first ten years of 16 kreutzers (about 7 cents) per year for each meter of track laid, and of 26½ kreutzers (about 11 cents) per meter during the subsequent years. A further tax of 56 kreutzers (about 23 cents), to be paid every three months, is levied for every square meter of ground occupied by street-car stations or waiting rooms. At the expiration of the street-car franchise, the plant, including the cars, but not the horses, becomes the property of the city if the city desires to claim it. The stables and other building are to be sold to the city at an appraised price if the right to purchase is claimed. On the other hand, the city may demand the removal of the tracks on the expiration of the franchise, in which case the streets must be restored to their condition previous to the laying of any tracks at the expense of the street-car company. As a guaranty for the fulfillment of these conditions the owners are required to deposit 80,000 florins (about $33,000), which sum is forfeited in whole or in part should the conditions of the franchise not be carried out.

The rates of fare are 5, 10, and 15 kreutzers (2, 4, and 6 cents, approximately), the fare being regulated by the distance traversed. This is estimated by stations, which are established at intervals along the line. A person riding a distance of four stations or less pays a fare of 5 kreutzers; for a distance beyond four stations, 10 kreutzers; and, if riding continuously from one suburb into another, the maximum fare of 15 kreutzers. A ticket is given to each passenger by the conductor when he collects the fare, and an

inspector passing through the car on each trip requires these tickets to be exhibited. The rates of fare are subject to the approval of the city council.

The running of cars is required from 6 o'clock in the morning till 11 o'clock at night at intervals of not more than fifteen minutes, and a night service has to be established should any need for it arise. In case of obstructions preventing continuous passage, the obligation rests upon the street-car company to provide means of transportation for the intervening space, without extra charge, till the trip can be resumed in the regular cars. The exclusive right to the use of the streets is not granted by the terms of the franchise, and no objection can be raised to other lines crossing the tracks laid by the company. The keeping of the pavement in good repair between the tracks and for a distance of 18 centimeters on either side is also exacted, as well as the removal of snow for an equivalent space during the winter months.

The facilities afforded to the public can hardly be said to be satisfactory. The insufficiency of accommodations at certain periods of the day, and the consequent overcrowding of the cars, is a frequent occurrence, and on holidays the service is never equal to the carrying of the passengers desirous of accommodation. A rule exists that each car shall carry no more persons than can be seated, but the rule is a dead letter. Outside of this lack of sufficient carrying accommodation the service is good, being regular and well equipped.

The financial standing of the street-car property is difficult to be ascertained with certainty, on account of the reticence of the management on the subject. The large patronage and the low rate of wages—conductors and drivers receiving but 87 kreutzers (36 cents) for 12 hours' work a day—make it reasonable to suppose the enterprise profitable. Figures obtained from the only accessible authority would show the net profit of the last year to have been 100,000 florins on an investment of about 3,000,000 florins.

WILLIAM A. RUBLEE,
Consul.

UNITED STATES CONSULATE,
Prague, August 14, 1891.

VIENNA.

REPORT BY CONSUL-GENERAL GOLDSCHMIDT.

SYSTEMS OF PUBLIC TRANSPORTATION.

In Vienna and its suburbs there exist:

(1) Public carriages or cabs, which are divided into two-horse carriages, called "fiacres," and one-horse cabs, generally called "comfortables." The fiacre is two, three, and four seated, while the comfortable is only two or three seated. The fiacre is a time-honored Vienna institution, and is generally considered the most stylish and the fastest public conveyance existing.

The one-horse cab, or comfortable, although far better than the corresponding Berlin second-class "droschke," is still considerably inferior to the fiacre.

(2) Two tram-car companies, running horse cars for urban and suburban transportation. One of these companies runs part of its cars in the suburbs by steam dummies of 20-horse power and tested to a pressure of 30 atmospheres; their working pressure, however, is not higher than 10 atmospheres, 15 being the utmost limit permitted by law. The horse cars are one-horse and two-horse cars, each having a driver and a conductor. They are platform cars, substantially constructed after the American pattern. There are summer and winter cars. The former have no windows, and the roof of the car is supported by four or six uprights. For the protection of the passengers against the sun or rain canvas curtains are employed, which are rolled up or let down on the sun or weather side when needed. The one-horse cars have sitting room for fourteen passengers and standing room for another fourteen; the two-horse cars have sitting room for eighteen passengers and standing room for fifteen. The horse cars are divided into two compartments, of which one is reserved for nonsmokers, while the other serves as a smoking compartment. The seats on the driver's and rear platforms are also for smokers. The track of the tram (horse) cars is laid after the standard railway gauge, and all the lines have double tracks, excepting where narrow streets permit but a single track; in the latter case suitable switching places are provided. The horse cars run in summer from 6 a. m. to 12 p. m. and in winter from 7 a. m. to 11 p. m.

(3) Several lines of omnibuses. These are only two-horse omnibuses, with inside and, eventually, platform seats, but no seats on the roof. The latter were once tried, but abolished. The omnibuses have inside sitting room for ten to twelve passengers. As a rule, four seats are for smokers and six for nonsmokers. There are different kinds of omnibuses, of which, however, two are predominant. One, the older style, is divided into two compartments, of which the rear is for smokers and accessible by a door in the rear of the vehicle, while the forward compartment is accessible by a door on either side. These omnibuses are built on the common wagon gauge. The new style of omnibuses are built on the railway gauge, so that they can be run on the tracks of the horse cars. These omnibuses resemble the horse cars in build; they have a forward and rear platform and inside seats along their sides, leaving a free passage through the vehicle from rear to front. On these omnibus cars, as they might be called, smoking is permitted on the platforms only. They will hold from twenty-four to thirty passengers, standing and sitting. Most of the omnibuses have a driver and a conductor. The running time of the omnibuses is about the same as that of the horse cars.

(4) Two suburban lines of steam tram cars, which in size and construction are similar to the horse cars.

(5) A railway line establishing a connection between the different principal railway stations. Branches of these railways also run out to some of the summer resorts near Vienna.

(6) A suburban electric railway to one of the summer resorts. This electric railway starts from a place called Moedling (a station on the Southern Railway about 16 kilometers* from Vienna) and runs a distance of 8 kilometers through a valley called the Hinterbruehl. These electric cars are driven by electricity produced at a central station and conducted along the line by elevated cables, from which it is conveyed to the motor on the car by trolleys.

(7) During the industrial exposition in 1890 a petroleum-motor tramway was established between the city and the exhibition grounds, which was run at a high rate of speed, and gave general satisfaction.

(8) Steamboats. On the arm of the Danube, called the Danube Canal, which branches off from the Danube River 5 kilometers above Vienna at a place of summer resort called Nussdorf, separating the second district of the city from the first district, or the inner town, and the third district, and running again into the Danube about 8 kilometers below Vienna, there are several steamers plying. These steamers carry passengers from the large Danube steamers anchoring below the city, when they are prevented by low water from entering the canal up to the city, and run up as far as Nussdorf, stopping at several landing places to discharge or take in passengers. The steamers are double-deck side-wheel boats. A few years ago an attempt was made to run small and very swift propellers between the different landings in the city. Numerous accidents having occurred, however, on account of the canal being very narrow and at times very shallow, this traffic was stopped.

(9) In connection with the local steamers, which have their terminus at Nussdorf, situated at the foot of a mountain called the Kahlenberg, a cog-wheel railway, constructed after the plan of the Righi Railway, runs up this mountain, on the summit of which stands a fine hotel and restaurant, which is a favorite resort of the Viennese in summer.

OWNERSHIP.

The public carriages or cabs are, either singly or in certain numbers, owned by private individuals In the former case the owner himself drives, while in the latter case, where one man often owns as many as thirty carriages, he employs drivers, who have to pay a certain daily amount to the master, which, as a rule, amounts to 5 florins† for the fiacre and 2 florins for the one-horse cab or comfortable. The balance of the receipts belongs to the driver. The horses are generally fed by the proprietor. All the public cabs are numbered.

The two tramway companies are joint-stock companies. The Vienna Tramway Company has a full paid-up capital of 13,855,020 florins and the New Vienna Tramway Company of 4,560,000 florins.

The omnibuses up to few years ago were all owned by private individuals, but now a great part of the different lines has been acquired by an English company, the Vienna General Omnibus Company.

*1 kilometer=0.6213 of a mile.

†1 florin=42 cents. There are 100 kreutzers in a florin; the kreutzer is therefore 0.42 cent.

The two suburban steam tram-car lines were originally conceded to and owned by a private firm of machine builders (Krauss & Co.), but have since passed into the hands of a joint-stock company.

The connecting railway belongs to the Southern Railway Company.

The electric railway (Moedling-Hinterbruehl) belongs to a company.

The petroleum road was established and run as an experiment by a company or syndicate which was working the patents on the petroleum motor employed.

The local steamers are owned by the Danube Steamship Company.

The Kahlenberg cogwheel railway belongs to a joint-stock company.

By "lines" is understood the boundary line described by the old fortification walls, which still exist, and which, forming a pretty, regular circle of about 6 kilometers in diameter, divide the old interior town from the newer suburban parts. At the places where these walls are intersected by streets internal revenue offices are established, where a duty is collected on all articles of consumption entering and a toll or duty on draft cattle at the rate of 4 kreutzers per horse or head. These customs offices are to be removed to a greater distance in the next year. The Prater, which is mentioned as excluded from the common cab fare, is a vast public park situated in the northeast of the city.

RATES OF FARE.

The rates of fare for public carriages (fiacres and comfortables) for drives inside the lines of Vienna, excluding the Prater, are as follows:

	Florins.
To the fiacre (two horses):	
For the use of the carriage up to first half hour	1.00
For every following half hour	.50
To the comfortable (one horse):	
For the first quarter hour	.50
More than a quarter of an hour and up to half an hour	.60
For each following quarter hour	.20

For the following drives outside of the lines:

	Florins.
Starting from any point inside of the lines to a point distant from 3 to 4 kilometers from the center of the city:	
To the fiacre	2.00
To the comfortable	1.20
Starting from any point inside of the lines to a point distant from 5 to 6 kilometers from the center of the city:	
To the fiacre	2.50
To the comfortable	1.60
The same for a distance of 8 kilometers:	
To the fiacre	3.00
To the comfortable	2.20

When the cab is used for driving back again, there is to be paid for the time of waiting and for time used in returning: To the fiacre for each half hour, 50 kreutzers; to the comfortable for each quarter hour, 20 kreutzers.

During the hours from 11 p. m. to 7 a. m. the tax is increased by one-half.

For drives to the different railway stations and to the different public dancing establishments there is to be paid—

	Florins.
Between 7 a. m. and 11 p. m.:	
To the fiacre	1.50
To the comfortable	1.00
Between 11 p. m. and 7 a. m.:	
To the fiacre	2.20
To the comfortable	1.30

In employing a cab by time, with a fiacre each fraction of a half hour is reckoned as a full half hour, and with the comfortable each fraction of a quarter hour is to be reckoned as a full quarter hour. As a rule, the fare is paid when the cab is discharged, excepting in drives to railway stations and theaters, when it is to be paid before reaching the place of destination. (Government regulation of June 9, 1889, No. 33,543).

The rates of fare for the Vienna Tramway Company are as follows: For each trip inside of the lines, 8 kreutzers for adults and 6 kreutzers for children from 2 to 10 years; for each trip from the town out into the suburbs (outside the lines) 3 to 4 kilometers, 10 kreutzers for adults and 6 kreutzers for children; for each trip in the suburbs 2 to 2½ kilometers, 6 kreutzers for adults and children; from the Ringstrasse (a kind of boulevard surrounding the innermost part of the city) direct to the summer resorts, which are distant from the center of the city from 6 to 8 kilometers, 12 kreutzers for adults and 6 kreutzers for children; from any other point inside of the lines to one of the summer resorts, 15 kreutzers for adults and 10 kreutzers for children; from any of the lines to the summer resorts situated in that direction, 10 kreutzers for adults and 6 kreutzers for children; from the tramway stables, situated about halfway between the city and the summer resorts, 6 kreutzers for adults and children. The summer resorts are from 3 to 4 kilometers distant from the lines of Vienna. The fare from the central cemetery, which is about 10 kilometers distant from the center of the town, is 20 kreutzers for adults and 10 kreutzers for children.

As there are numerous lines of tramways running in different directions to and from points inside and outside of the lines, exchange tickets are given, which cost the same price as direct tickets, but which permit the changing of cars as often as is necessary to bring the passenger to his point of destination. These exchange tickets, however, are only available in one certain continuous direction, not to return on any line. The tickets are square pieces of thin paper showing a running register number, and in large, red print a certain control letter and number, of which a different one is used on all lines every day. The face of the ticket is divided into as many squares as there are different directions of existing tramway lines, each of which directions of lines is indicated on one of these squares. A border around three sides of the ticket contains the hours of the day from 6 a. m. to 5 p. m. and the hours of the night from 6. p. m. to 11 p. m. When a passenger asks for an exchange ticket, the conductor punches a hole through the square indicating the line and direction in which the car is going and

through the respective hour on the ticket. This ticket is good for one hour from the time it was punched, and the passenger may change cars as often as is necessary to convey him in one continuous direction. On entering another car the conductor examines the ticket and, if correct, punches it again. Inspectors employed by the company board the cars and examine the tickets from time to time.

The New Vienna Tramway, also called Suburban Tramway, has only two lines running into the interior of the city to the Ringstrasse, but forms a belt line around the city outside of its lines on the south, west, and north sides. The lines to the summer resorts are run by steam dummies, as already mentioned. The rates of fare are as follows: For a trip from one line intersection to the other, about 2 kilometers, 5 kreutzers for adults and children; from a line to a summer resort 6 kilometers distant, 8 kreutzers for adults and 7 kreutzers for children; to a summer resort 10 kilometers distant, 10 kreutzers for adults and 6 kreutzers for children; from the Ringstrasse to a summer resort (2 kilometers more), 12 kreutzers for adults and 10 kreutzers for children; from the Ringstrasse to the line, 5 kreutzers for adults and children.

The rates of fare for omnibuses are as follows: For a trip outside of the lines, 12 kreutzers for adults and 6 kreutzers for children; to the railway stations, 12 kreutzers (with express omnibus, 15 kreutzers); for a trip from a railway station direct, 15 kreutzers, and at night from 10 p. m. to 6 a. m., 20 kreutzers; for a trip from a line to the Ringstrasse, 6 kreutzers; into the interior town, 9 kreutzers for adults and 6 kreutzers for children; from theaters and circuses, 15 kreutzers for adults and 10 kreutzers for children.

The omnibuses also give exchange tickets on the same plan as the horse cars. The lowest price of one of these exchange tickets, however, is 12 kreutzers.

Both horse cars and omnibuses issue tickets in series of ten with a reduction of 10 per cent. For the horse cars these are only for trips outside of the lines; for inside trips there is no reduction, but there are passes issued at the following prices: According to the line to be used, 4.50, 5, 5.50, 6, and 6.50 florins for one month, and 22, 25, 27, 30, and 33 florins for six months. Good on all lines for one month, 9.50 florins in winter and 10.50 florins in summer; for six months, 45 florins from October to March, 50 florins from January to July or July to December, and 55 florins from April to October. The owner of a pass can obtain similar passes for his wife and children at a reduction of 50 per cent.

The fare for a distance of 5 kilometers on the two lines of steam tramways to the summer resorts is as follows: First class, 25 kreutzers; second class, 15 kreutzers. For longer distances the fare is higher in the same proportion.

The railway connecting the Vienna stations of the different railroads, the same as the latter themselves as far as the urban and suburban traffic is concerned, have first, second, and third class cars and have their rates of

fare fixed by zones, that is to say, the fare (third class) within the first zone of 10 kilometers is 10 kreutzers; the second 10 kilometers, 20 kreutzers; the third 10 kilometers, 30 kreutzers. Second-class fare is double and first class treble that of the third class.

The electric railway (Moedling-Hinterbruehl) extends only for a distance of 8 kilometers, for which it charges 25 kreutzers per ticket.

The fare on the petroleum-motor tramway from the exhibition to the second district of the city (a distance of about 1½ kilometers) was 15 kreutzers.

The steamer fare is as follows: For the whole distance from one end of the city to the other (Nussdorf), 20 kreutzers for adults and 10 kreutzers for children; return tickets, 30 kreutzers for adults and 15 kreutzers for children.

The rates of fare on the cogwheel railroad are as follows: From Nussdorf to the top of the mountain (a total distance of nearly 5 kilometers), 80 kreutzers for first class and 40 kreutzers for second class; for descending to Nussdorf, 60 kreutzers for first class and 30 kreutzers for second class; return tickets, 1.20 florins for first class and 60 kreutzers for second class.

RETURNS TO THE MUNICIPALITY.

All individuals and companies owning systems of public transportation are subject to the ordinary system of taxation by the Government. Joint-stock companies, such as the two tramway companies for instance, have to pay a certain percentage of their gross receipts to the municipality for the franchise granted to them, besides the regular taxes to the Government. The tramway companies have to pay 5 per cent of their gross receipts in quarterly installments. The omnibuses and other public vehicles pay a certain amount per vehicle for license.

In Austria the concessions for systems of transportation are only granted for a certain number of years (as a rule from fifty to ninety), after the lapse of which the entire property of the company passes over into the possession of the Government or municipality against repayment of the original share capital. In the contracts between the municipality of Vienna and the two tramway companies it is stipulated that these tramways shall become the property of the municipality after a certain number of years.

PUBLIC CONTROL.

The rates of fare for public carriages or cabs are fixed by the Government. The fiacres and comfortables have fixed standing places in the different parts of the city, which are allotted to them by the police authorities and which are intended for a certain number of vehicles. After finishing a trip the cab must return to its proper standing place. In rotation, certain numbers of cabs are ordered by the police authorities to attend to the arrival of the trains or boats at the different stations. The police control is very strict, and a driver refusing a job or charging more than his tax, if called before the police, will be fined. If such complaints occur repeatedly against a driver, his license will be suspended or withdrawn, in which case he can not any more be the

driver of a public vehicle in Vienna. The drivers have to pass an examination before the police authorities, showing that they are able to drive and have sufficient knowledge of the city.

The rates of fare of the tramway companies have to be ratified by the municipality, which has also to determine how many cars have to be run on the different lines and whether one-horse or two horse cars are to be used. The tramway companies have also to clean the streets through which their cars run the width of the tracks free of cost and these streets their entire width for a certain yearly amount allowed to them by the municipality. The lines specified in the contracts must be built and finished within the time stipulated therefor. Should it be found necessary in constructing a line that certain buildings or whole rows of buildings have to be torn down, this has to be done at the expense of the company without any claim to indemnification. If, by the building of sewers or the paving of streets, the traffic is interrupted for a certain time, the company is not entitled to any damage for the loss in receipts accruing therefrom. Should it be found that the tramway traffic on any line be obstructive to the other traffic, the municipality has the right to demand that the tramway traffic on that line be stopped entirely. The tramway companies are obliged to avail themselves immediately of any technical novelties which may be an improvement. If, for any reason not resulting from *force major*, the tramway traffic is stopped, the company has to pay a daily fine to the municipality.

The omnibuses are held by the authorities to use the streets only which are indicated to them and to keep the time given in their time-tables. Rates of fare and time-tables must be approved by the Government and the police authorities and must be adhered to. The Government determines how many omnibuses have to run per hour; more may be run, but not less. The omnibus lines running from and to railway stations are obliged to keep at least one omnibus waiting at the station for the arrival of each regular train. Both tramways and omnibuses have voluntarily permitted free passage to the uniformed members of the police force, but only one such person may use the conveyance at a time.

The steam tram cars are subject to the same rules and regulations as the tramways. They are, besides, held to observe the usual precautions in the passing of crossings, and are not allowed to run at a speed much higher than that of the horse cars.

The connecting railway and the other railways are worked under the general railway regulations.

The electric railway is running under the same regulations as the steam tram cars.

The petroleum road was run under the same rules.

The steamers belonging to the Danube Steamship Company are regulated by the laws appertaining to steam navigation in general. Their fares and time-tables must also be approved by the Government.

The cogwheel railroad is subject to the general railway regulations.

TRANSPORTATION FACILITIES AND PUBLIC NEEDS.

The means of transportation are in no way sufficient. There are in Vienna about 1,000 fiacres, about 1,300 comfortables, and about as many omnibuses. The total length of the Vienna Tramway Company's lines is about 70 kilometers; those of the New Vienna Tramway Company about 50 kilometers. The total number of cars of both companies is about nine hundred. The two tramways together carry about 50,000,000 passengers per year.

The horse cars especially are run in insufficient numbers, and are generally overcrowded. There has been a police regulation issued limiting the number of passengers carried by the horse cars. The rule appears, however, not to be enforced. Great satisfaction is expressed by the people at the great reduction of railway fares by the introduction last year of the so-called "zone tariff," fixing the third-class fare at 10 kreutzers for every 10 kilometers. The traffic to the numerous and beautiful summer resorts around Vienna has thereby taken unlooked-for dimensions, so that on a fine Sunday in summer often more than 10,000 people are carried over one line.

There are often complaints about the cab fares being too high, but in most cases these complaints do not appear to be justified.

Plans are now being prepared for building a regular city railroad, after the plan of that of Berlin, and it is generally hoped that this will afford a cheaper means of communication in and through the city.

The systems of local transportation now existing are highly profitable to the parties owning them. The tramway company, for instance, pays, after all the numerous deductions, a dividend of 10 per cent; the New Vienna Tramway Company pays 5½ per cent. The private parties running omnibuses have so far all become rich men, and, in fact, a transportation enterprise has not been known to fail in Vienna.

JULIUS GOLDSCHMIDT,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, June 19, 1891.

BELGIUM.

ANTWERP DISTRICT.

REPORT BY CONSUL STEUART.

PUBLIC CARRIAGES OR CABS (VIGILANTES).

The public carriages or cabs were for many years the most convenient and practicable means of public transportation for persons in this city, and the number in use is even now continually increasing. The latest official statistics issued give the number in use at 549 and the number of individuals

engaged in the business at 167, while in the year 1880 there were only 321 public carriages and 151 persons engaged in the business.

These carriages may be ordered to residences, may be hailed on the street if unoccupied, or taken at any of the public squares in the city where they are authorized to stand, paying for the latter privilege a tax to the city varying from 10 to 150 francs per year according to location (1 franc=19.3 cents).

All such carriages are drawn by one horse, numbered and required to have attached in some conspicuous place in the inside a tariff prescribed by the city authorities regulating the charges for fare. These charges are as follows: Closed carriages in the interior of the city from 6 a. m. to 10 p. m. for one or two persons, 1 franc a drive (course); for three or four persons, 1.50 francs; from 10 p. m. to 6 a. m. the charges are respectively 2 and 2.50 francs. Carriages may be engaged by the hour, the charges being 1.50 francs during the day and 2.50 francs during the night, the first hour being always paid in full and every half hour commenced in accordance with the rates stated. The charges for open carriages are about 40 per cent higher.

Carriages can also be engaged by the day or the month, which is often done by doctors, brokers, etc. In such cases the carriages generally have no numbers, and there is no regular fare prescribed, the charges depending on the time the vehicle is used.

Many of the cab-owners also furnish the carriages for weddings, funerals, and other ceremonies, the carriages in such cases being drawn by two horses, the charges being generally a matter of agreement depending on the outfit and number wanted and the time taken up.

CITY HORSE CARS.

The Société Anonyme des Tramways Anversois was the first to establish a street railway in this city. They obtained the concession from the city authorities to this end in 1870, and, with a capital of 800,000 francs, divided into one thousand six hundred shares, commenced operations, running their first cars in 1873 from the suburb of Berchem, through the city, down to the River Scheldt. Shortly afterwards a branch line was built from the custom-house, in the north of the city, to the southern part, running along the avenues du Commerce, des Arts, de l'Industrie, and du Sud, situated on the site of the ancient fortification ditches. Another line was built from the suburb of Borgerhout, running in a westerly direction into the heart of the city, and, lastly, a branch was built in 1885, running from the extreme east of the city to the Place de Meir, the center of Antwerp. The track of the company is 1.3 meters wide, and its total length is 10,810 meters (1 meter= 1.094 yards). The company employs both closed and open cars, the latter for summer use; these have twenty-eight seats and standing room on the platforms for a number of persons, while the closed cars have sixteen seats on the inside and room for eight persons on each of the two platforms. The cars run every five minutes up to 10 p. m., and supplementary cars are run in the

early part of the night if the service may require it. The city council prescribes the rate of fare, not to exceed 10 centimes per kilometer, and the charges on the principal and branch lines vary from 10 to 25 centimes. The rent tax paid to the city in 1889 amounted to over 69,000 francs. The concession was granted for a period of twenty years, subject to renewal.

The Société Anonyme des Tramways du Sud, with a capital of 450,000 francs divided into four thousand five hundred shares, inaugurated their line in 1874. It runs from the Place Verte, the center of the city, southward to the villages of Kiel, Wilryck, and Hoboken, running in the city limits at intervals of five minutes and to the villages named at intervals of forty-five minutes. The concession was granted for a period of forty-five years, and the rent tax payable to the city after 1892 is increased by 500 francs every five years. The track of this line has the same width as that of the first-mentioned one, and its length is about 5,000 meters. The cars used are likewise the same, and the rates of fare are in the same proportion.

The Société Anonyme des Tramways Nationaux, with a capital of 585,000 francs, in 1875 established a line from a point in the southeastern part of the city, past the principal railway depot and the post-office down to the River Scheldt, a distance of 4,269 meters. The track, cars, and fare are the same as those of the above-mentioned companies. They obtained the concession for a period of thirty-five years, and the rent tax paid to the city in 1889 amounted to 40,790 francs.

The Société Anonyme des Tramways Maritimes established a line from the Stuivenberg Hospital, in the extreme north-northeastern part of the suburb of Borgerhout, running through this suburb to the northern part of the city bordering on the docks to the River Scheldt, a distance of 2,860 meters, and further along the river bank southward a distance of 2,500 meters, the fare for the entire run being only 15 centimes, with a view to facilitate communication for the laborers employed near the river and docks. The line was inaugurated in 1877, and the concession was given for thirty-five years. The rent tax paid to the city in 1889 amounted to 13,045 francs. The cars and the track are the same as the preceding ones.

The Société des Tramways du Nord in 1879 built a line running from the Marché aux Chevaux, in the northern part of the city, to the suburb of Merxem, a distance of 2,950 meters. The concession was granted for a term of forty-five years, but this company lately sold out their stock to the Société des Chemins de fer Vicinaux, which company will be referred to later.

A narrow-track line running from the center of the city southward a distance of 2,070 meters, called "Poney Tram," was built in 1888. This line employs small cars seating about twelve persons and having room on the platforms for the same number. There are no open cars on this line.

The Société Anonyme des Tramways Omnibus only this year inaugurated a narrow-track line, running from the extreme eastern part of the city to the docks. The cars employed are closed ones and smaller and lighter than those employed by the other companies. They are furnished with a

fifth wheel, by which means they are moved from the rails and put on again at will. The fare is 10 and 15 centimes.

A line of omnibuses, running from the same point of Antwerp to the Pays de Waes railway depot, was also established a short time ago by the Société Anonyme des Omnibus Anversois. They employ the omnibus of the London type, seating twelve persons inside and sixteen on the roof (*impériale*). They run their carriages every six minutes, and the fare is 10 and 15 centimes. The yearly city tax amounts to 500 francs per omnibus.

The above two lines only running for a short time, I am unable to say whether they are profitable to the shareholders; but, from the traffic they enjoy, it is to be presumed that they are so.

The Société Anonyme des Chemins de fer Vicinaux several years ago built a number of lines running regular trains from Antwerp to the neighboring villages and towns, steam being the means of locomotion. Such lines are:

A line running from Antwerp to Hoogstraeten, Ostmalle, and Turnhout, 53.7 kilometers in length, with a capital of 2,148,000 francs, of which 43 per cent was subscribed by the Government, 25 per cent by the province, 21 per cent by the communities, and 11 per cent by private parties. The total cost of the line was 1,970,419 francs.

Another line runs from Antwerp to the village of Brasschaet, via Merxem, with a branch to the village of Schooten. The capital invested amounts to 1,189,000 francs, subscribed as follows: Twenty-nine per cent by the State, 30 per cent by the province, 16 per cent by the communities, and 25 per cent by private parties. The total length of the line is 26.7 kilometers, and its cost was 969,309 francs.

Another line runs from Antwerp to the village of Santvliet, with a branch to the village of Lillo, the capital invested being 1,395,000 francs, of which 22 per cent was taken up by the State, 25 per cent by the province, 32 per cent by the communities, and 21 per cent by private parties. The total length of this line is 37.8 kilometers, and its cost was 1,462,029 francs, exceeding the capital subscribed by 67,000 francs.

Another line runs from Antwerp to the village of Santhoven and thence to the town of Lierre, a distance of 25.8 kilometers. The capital subscribed amounted to 1,060,000 francs, the State contributing 24½ per cent, the province 32 per cent, the communities 38½ per cent, and private parties 5 per cent. The total cost was 840,713 francs. The receipts in 1889 were 12,053 francs for passengers and 580 francs for merchandise.

STAGE COACHES (MALLES POSTE).

A coach taking passengers, small parcels, and the mail runs from Antwerp to Turnhout every day and *vice versa*.

Three coach proprietors run daily coaches from Antwerp to Lierre, taking passengers and parcels.

Of heavy wagons or carts (*voitures de roulage*) there are two proprietors, taking small freight twice each week to the village of Wilmarsdonck, one

twice each week to Oorderen, two twice per week to Beirendrecht, one once a week to that place, and two twice each week to Santvliet.

Passenger service in the basin docks of Antwerp.—A company was formed in 1888 establishing such a service, employing small steamboats. The distance covered is 2,300 meters, and the fare varies from 10 to 30 centimes. The concession was granted for a period of twelve years, and the tax payable to the city was fixed at 2,000 francs per year, which, after 1891, is to be increased by 1,000 francs every three years.

EXPRESS SERVICE (MESSAGERIES).

J. B. Van Geud & Co., of this city, are proprietors of an express service for freight throughout Belgium. They deliver and call for freight at residences, the latter on request, employing large express wagons drawn by two horses, and attend to the reception and forwarding of freight at the different railway depots and steamship offices. Their charges from Antwerp to Turnhout or to Hoogstraeten, in this district, are as follows: From 1 to 5 kilograms*, 40 centimes; 5 to 10 kilograms, 50 centimes; 10 to 40 kilograms, 60 centimes; 40 to 50 kilograms, 75 centimes; 50 to 60 kilograms, 90 centimes; 60 to 70 kilograms, 1.05 francs; 70 to 80 kilograms, 1.20 francs; 80 to 90 kilograms, 1.35 francs; 90 to 100 kilograms, 1.50 francs; for larger quantities, 1 franc per 100 kilograms, the maximum, however, being 1.50 francs. There is an extra charge of 30 centimes per 100 kilograms when freight is taken at residences.

There are in this city a number of coöperative societies, established under the title of corporations, or "natien," whose business it is to transport all kinds of merchandise on this market from one point to another, furnishing the wagons, horses, and hands necessary for the purpose. The principal one of these corporations is the Noord Natie, attending to the reception, weighing, and verification of merchandise, to the loading and unloading, to the carriage to and from the wharves, railway depots, warehouses, factories, mills, etc., of such. They have a large number of wagons and fifty strong horses in their stables. The rate of their charges varies naturally, and depends upon the kind of goods, the amount of manual labor required, and the risk they incur when hauling fragile goods or goods otherwise liable to be damaged, they holding themselves responsible against any loss of such nature. For receiving on the wharf, weighing, and carriage to warehouses, boats, or railway depots the charges per 100 kilograms are as follows:

	Centimes.
Pressed bales of wool, hair, sheepskins and hide cuttings, unpressed bales of wool from the Cape of Good Hope, woods (as mahogany, ebony, cedar, and walnut), staves, bundles of steel, of tubes, thin metal plates, iron wire, copper in ingots, copper pipes, whetstones, marble plates or tables, rabbit or goat skins, tobacco in cases, pieces of cloth or shoddy, boxes of candles, chicory in bags, bales of rags, pumice stones in casks, biscuits or crackers in boxes or barrels, wooden bolts or plugs in casks, Belgian flax	35

*1 kilogram=2.205 pounds; 1 centime is somewhat less than 0.2 cent.

	Centimes.
Large bales of washed wool, bones and horns, refined sugar, loaf and crystallized sugar, large pieces of manufactured iron (from 5,000 to 7,000 kilograms), feathers in bags, chimney black in barrels, bark in bags	60
Salted hides, raw beet sugar, coffee, cacao, pepper, grain for distilleries (without weighing), soap, Spanish licorice, gum, honey, hogsheads of leaf tobacco, large cases and bales of tobacco (without weighing), American cotton, marble slabs, oil of turpentine, cod-liver oil, alcohol and other liquids in large barrels (weighing over 300 kilograms), figs, prunes, dates, nuts, almonds, raisins in cases, prunes in casks, sulphur, natron and mineral ore in bulk, china clay	30
Dry hides and bundles of hides, large pieces of manufactured iron	45
Horns, Russian hemp, tow, and flax (in bales or loose), orange peels and leaves, cochineal, gallnuts, indigo, nutmegs, cloves, mustard meal, shellac, pickled bark in cases, fish glue, chicory, flax and turnip cakes	50
Cane sugar, beet sugar (raw), barrels of flour, flaxseed, rice and rice flour, dyewood, logwood, other woods and beams, iron wheels, thick plates, lead in ingots, wheel bands, axletrees, iron bars and springs, bacon in boxes, saltpeter, wax in boxes, surat cotton, sumac, gutta-percha, wood extract, vegetable fiber, Mexican fiber, matweed in bales, pressed tow in bales, flour in bags, rosin, madder, palm oil, china clay in barrels, chloruret, agate stones, candle grease, horse grease, soda, lard, sulphur in casks, guano in casks, peas, copper in casks, potash, meat and fish in casks, butter, lead ore..	25
Paper, glass in boxes, tin, and zinc	18
Grain and seeds, rails and bolts, large pieces of machinery, parts of bridges	20

Cases of plate glass are charged at rates depending upon the manual labor and the risk of breakage incurred in their transportation. Boxes of cigars are charged according to the manual labor required. Hops in pressed bales are charged 30 centimes per bale; unpressed bales, 40 centimes per bale. Boxes of lemons or oranges of 70 or 80 kilograms pay 30 centimes per box; of 40 kilograms, 20 centimes per box. Raisins in cases under 15 kilograms pay 5 centimes per case. Manufactured goods are charged 50 centimes for receiving on shipboard and transportation per package of from 1 to 100 kilograms; for each additional 100 kilograms per package, 20 centimes. For receiving guano on board, weighing, repairing the bags, and transportation to a warehouse or on railway cars, 27 centimes is charged. When a ship is not moored close to the quay, an additional 2 centimes is charged; for transportation into the city a further charge of 5 centimes is made. The prices for petroleum vary according to the situation of the different storehouses, refineries, or railway cars where the barrels are to be taken.

For transportation into the bonded storehouse of 2,500 kilograms and more on one B. 1 L. for crude merchandise in boxes, large manufactures of iron, nails, and bolts a charge of 20 centimes per 100 kilograms is made; for the same from the railway car to the ship, 30 centimes. Barrels of alcohol or wine pay 30 centimes per 100 kilograms for discharging from the cars and transportation to the bonded stores; for discharging from the car and taking to the ship, 40 centimes. Light merchandise pays 40 centimes for the first-named service, 50 centimes for the second, and 50 centimes for transportation from the bonded stores to the ship. Manufactured goods are

charged as follows: Discharging from car and taking to bonded stores, 1 franc per package or 75 centimes per 100 kilograms; discharging from car and taking to ship, 1.75 francs per package or 1 franc per 100 kilograms; taking from bonded stores to ship, 1 franc per package or 75 centimes per 100 kilograms.

The society known under the style of "Voerlieden" have another mode of interesting themselves in the transportation of merchandise. They do not undertake any work as regards unloading and loading of merchandise or its manipulation in any manner; they simply let their wagons and horses by the day; that is, by the trip from one point to another, and their charges vary according to the distance and the weight of the load. The corporations, or natien, often apply to the said Voerlieden in cases of excess of work, when they have not sufficient wagons and horses of their own to fill orders, the superintendence of the transportation being always in the hands of the corporations undertaking the entire work, manual and other. The charges of the Voerlieden are as follows: For an ordinary trip with about 3 tons, 3 francs; with about 5 tons, 6 francs; a horse, wagon, and driver for a whole day, 12 francs; for transportation outside of the city limits, 2 francs per hour from the departure from the stable to the return thereto; for one-horse loads, 2 francs; for two-horse loads, 4 francs.

The corporation known under the style of Markt-Voerlieden is specially engaged in the business of transporting grain, employing for the purpose long and low wagons. Their charges vary, according to the distance of the journey, from 8 to 21 centimes per 100 kilograms.

The "hout-naties" are corporations making it a special business to cart wood and beams. The price for carting planks or boards is fixed per cubic meter or per running foot and according to length, that of beams according to dimensions as regards light woods, and that for mahogany, cedar, etc., according to weight, the prices naturally varying also according to the distance of the cartage. These corporations also take charge of all the manual labor attending the loading, unloading, and placing of the wood. Their charges are as follows for cartage of Riga beams from the Mexico dock to the railway or ship, including loading: Fifteen beams and more, 20 centimes per running meter; less than fifteen beams, 25 centimes per running meter. For hauling out of the water and cartage to railway cars, with loading thereon, the charges are: Fifteen beams and more, 20 centimes per running meter; less than fifteen beams, 25 centimes. The same charges are made for cartage into the city, without reloading. The charges to the wood yards in the vicinity of the Mexico dock are 15 centimes per running meter, and 20 centimes when piled up. Oak, pitch, pine, and yellow pine beams are charged as follows for transportation to railway cars or boat: For 10 cubic meters and more, 2.25 francs per cubic meter; less than 10 cubic meters, 2.75 francs per cubic meter; cartage into the city of oak beams, 3.50 francs per cubic meter; cartage into the city of pitch pine or yellow pine beams, 3 francs per cubic meter. Pieces of oak pay as follows per cubic meter: Cartage to

railway, 2.25 francs; cartage to ship, 3 francs; cartage to ship of American oak, 3.25 francs; cartage to ship of pitch pine and yellow pine, 3.75 francs. In these prices the manual labor is included. The cartage of small beams to railway or ship, including manipulation, costs: For 10 cubic meters and more, 2 francs per cubic meter; for less than 10 cubic meters, 2.20 francs per cubic meter.

There are also corporations who make it their special business to cart coal, the coal for private parties being carried on carts in sacks holding 1 hectoliter each (about 80 kilograms), and are, on arrival, carried on men's shoulders to the place prepared for its storage. As to the supply destined to steamers, it generally arrives in the railway cars, which run close to them on the wharf, and is discharged into the ship by baskets holding 1 hectoliter. The charge for either operation is made per 100 kilograms, and fixed according to the labor incurred in placing the coal where wanted.

There are a number of firms established in this city whose business it is to transport furniture from one point of the city to another. They have closed wagons, some of them of enormous size, carrying a weight of 100 tons, specially constructed for the purpose.

The firm of J. Tollet undertakes by contract the transportation of furniture to all parts of the Continent, and even to England, on condition that the steamers take their enormous wagons loaded on board. They attend to everything necessary, from taking the furniture out of the houses—packing the same to warrant it against damage or breakage, for which they hold themselves responsible—to placing the furniture in good order into the new residence, in whatever country it may be situated. The railway companies have cars so constructed as to carry these wagons loaded with furniture. The prices of transportation naturally vary according to the distance, the quantity of the furniture, and the difficulties and risks incurred.

The charge for moving furniture in the city limits is about 3 francs per hour for an ordinary-sized wagon with two horses, the time commencing when the horses leave the stable and ending when they return there.

JOHN H. STEUART,
Consul.

UNITED STATES CONSULATE,
Antwerp, September 2, 1891.

BRUSSELS.

REPORT BY CONSUL ROOSEVELT.

(1) The systems of public transportation actually in operation in Brussels and its suburbs consist of steam and animal traction. Electric traction is no longer employed, having recently been replaced by animal traction.

(2) The various lines are owned by companies and private individuals as follows:

An ordinary street-car line 38 kilometers in length, traversing the city at various points, with prolongations to several of the suburbs, is the property of the Brussels Street-Car Company. A similar line, also on city territory, extending from the Avenue Louise, the principal promenade, to the suburb of Ninove, having a length of 4 kilometers, belongs to the Company General of Economical Railroads (June 3, 1891). Four lines of omnibuses from 2 to 3 kilometers in length, starting from the center of the city and branching off to the various suburbs, are controlled by the Brussels Street-Car Company. These omnibuses are about to disappear, to be replaced by lines on rails. Two lines of omnibuses, running part of the distance (steep grade) on rails, kept upon track by raisable rollers, belong to the Company General of Economical Railroads and are 2 kilometers in length. A recently inaugurated line of omnibuses connecting the two principal railroad stations, 2½ kilometers in length, is the property of private individuals. Several lines of steam trams, serving the outskirts of Brussels and penetrating the suburbs and center of the city at different points, are owned by the National Society of Vicinal Railroads, a sort of auxiliary of the Government, enjoying the monopoly of establishing branch railroads or local interests throughout the Kingdom, and which generally leases the operating of lines to the highest bidder.

(3) Rates of fare vary. Recently strong efforts have been made on the part of the companies and societies to inaugurate uniform rates on all lines. Fares are generally regulated by distances, as follows: Place Liedts to Limité Schaerbeek St. Josse, 10 centimes; to Gare du Nord, 10 centimes; to Place Bronckére, 15 centimes; to Bourse, 15 centimes; to Place Anneessens, 20 centimes; to Gare du Midi, 25 centimes; to Rue Joseph Claes, 25 centimes; to Limité Forest, 25 centimes. This is 2 cents for the first section, with an increase of 1 cent for each or every two succeeding sections, according to distance between.

The cars employed in the lower part of the city are propelled by one horse. They are constructed so as to afford first and second class fares to the public. The interior is divided by a movable door into two sections. Only twenty-one passengers are allowed upon any one car, distributed as follows: Twelve interior (six first and six second class), four on front platform, and five on rear platform. Owing to the employment of larger cars in the upper sections of the city, two horses are attached to each car, and places for twenty-six passengers are similarly distributed as in the smaller cars.

(4) No share of the profits reverts to the authorities. An annual rent, determined for each line, is paid, as well as ordinary license tax, land, property, and animal tax, and all local taxes levied by the commune.

(5) Since 1875 the law regulates the concessions of tramways and prescribes that, when asked for, they can not be granted except by bid, which is based either on the length of time of the concession, on the tariff, or on the rent to be paid. Two of these bases are always determined by the conditions of the contract before the grant is made, which bears on the third one. Previous to this law concessions were granted by private conventions be-

tween the authority granting and the grantee, who also fixed the tariff. As to lines granted the National Society of Vicinal Railroads, concessions are made direct from the Government, without other intervention. The tariff is also fixed by the Government. Grants to omnibus companies are not embraced in the law of 1875. The recent reduction made in fares on the older lines meets the approval of the public. The profits realized by most of the companies are, owing to fusions, etc., only moderate. Other companies working under the contract system feel more or less the sacrifices made by the contractors.

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Brussels, July 3, 1891.

DENMARK.

COPENHAGEN.

REPORT BY CONSUL RYDER.

(1) In the city of Copenhagen the following systems of public transportation are in use, namely: Ordinary omnibuses, omnibuses partly running on rails (on the broader streets and roads) and partly as common wagons without such rails, street cars (tramways), steam cars, cabs, and jaunting conveyances.

(2) The omnibuses, street cars, and steam cars are owned by joint-stock companies, the cabs and jaunting conveyances by private parties.

(3) Ten öre (2.68 cents) is the fare most frequently charged by the street-car companies. This, for instance, is the fare paid on one of the main lines, between Fredericksborg (a suburb in the western part of the city) and Tivoli (the renowned establishment for summer amusements and a nucleus for several street-car lines)—a distance, respectively, of 2,462.8 yards and 3,089.6 yards by different routes—and between Tivoli, through the central part of the city, and Grönningen (3,439.1 yards); and, again, between the latter halting place and the "triangle," in the northeastern part of the city, where junction is made with the steam cars, which run along the strand as far as Klampenborg. The distance of the last-named fraction of the street-car line in question is only 1,812.6 yards; nevertheless, the fare is the same as for the two previously mentioned divisions of the line. This seems to be an anomaly, but it may be owing to practical and fiscal reasons, the traffic being much less in this part of the city than in the first-named districts. One of the other best patronized and most remunerative horse-car lines, the length of which is 3,649.8 yards, charges 15 öre (4.2 cents) for the whole distance, and 10 öre (2.68 cents) for two unequal fractions of the same for each of the divisions for passengers inside or on the rear platform, while the fare is only 5 öre (1.34 cents) for a series of smaller divisions, one distance of which,

for instance, is 1,254.7 yards, another being only 656.4 yards. The fixing of the rates and the points of division of the different lengths of this line seem especially wisely arranged so as to yield the stock company owning the line a handsome dividend and at the same time serve the practical wants of the people. A ride on the top of the cars on this line costs only 5 öre (1.34 cents) for distances of 1,911.1 yards and 1,738.8 yards, respectively.

The rates of fare by the steam cars before mentioned are, for instance: From Copenhagen to Hellerup, about 4,100 yards, 15 öre (4.02 cents); and to Klampenborg, the terminus of this line, 10,051.7 yards distant from Copenhagen, 30 öre (8.04 cents). These means of locomotion are principally made use of by the many residents—to a great extent only summer residents—along the beautiful strand following the coast line of the sound, and by parties and single persons making excursions to the woods, etc. Season tickets for various lengths of time for adults and for school children are issued at greatly reduced rates. The steam cars are not a success financially for the joint-stock company.

There is also a combination of horse and steam car tickets at reduced rates. All the various horse-car companies, as well as the steam-car company, sell tickets in lots of, say, a dozen at a discount of about 20 per cent.

(4) In the last concession issued for a horse-car line (in 1887) it is stipulated that the recipient of the concession shall be bound to pay such tax to the municipality of Copenhagen as may subsequently be determined on, and a similar provision has been made by the board of aldermen in the concession about to be granted for another line.

(5) As far as the omnibuses, the steam-car line on the strand, and the older horse-car lines are concerned, it is left to the respective companies to regulate and fix the rates of fare themselves. As to the latest licenses granted for the construction and running of horse-car lines, the secretary of the interior fixes the fares in accordance with a proposition from the municipality of Copenhagen. The cab fares are fixed by the magistracy after negotiation with the chief of police, and, as far as the jaunting cars are concerned, the hackney men have agreed upon set fares, which are approved by the chief of police.

On the granting of concessions for horse cars and for the steam-car line it was imposed on the grantees to keep the tracks, etc., in adequate repair at their own expense. In this agreement is, among other things, the area between the rails and 2 feet space outside the track on both sides included.

The concessions are, as a rule, granted for a term of thirty years from the date of the concession. As for the latest concessions granted, the municipality of Copenhagen has reserved to itself the right to expropriate the works at any time by paying full compensation for their value.

The regulations prescribed by the municipal authorities for cab-driving in Copenhagen are very satisfactory, and, I think, worthy of especial attention.

The city and suburbs are divided into four districts. The rate of fare for a single tour from and to any point within the boundary of a district is 70 öre (18.76 cents). For each crossing of a boundary line into any new district 30 öre (8.04 cents) are added. For further extension of rides to stipulated points beyond the exterior boundary lines various additions are made to the fare.

The fare by the hour within a single district is 1.50 kroner (40.2 cents) for the first hour or a part of an hour, with an addition of 40 öre (10.72 cents) for each additional quarter of an hour or part of a quarter of an hour. Pay for the time the cab will require to return to its starting point can not be demanded.

For drivers by the hour beyond a single district the regulation fare is 2 kroner (53.6 cents) for the first hour or part of an hour, and for each additional quarter of an hour or part thereof 40 öre (10.72 cents) are added. The cabman is further entitled to pay for the time which the cab will require to return to its starting point, calculated according to the rules for return rides, as below.

For night rides between 12 o'clock midnight and 6 a. m. the rates are double the day rates. Any ride which terminates after 12 o'clock at night or commences before 6 o'clock in the morning is considered as night service.

For return rides the fare is half the above-named ordinary rates. For waiting upwards of a quarter of an hour 30 öre (8.04 cents) are to be paid for each quarter of an hour.

Nothing is to be charged for small parcels, carpetbags, or baggage, but 15 öre (4.02 cents) are to be paid for each trunk or box.

The following rules are also to be observed:

(*a*) All properties adjoining a street or road constituting a boundary line between two cab districts are considered as belonging to the boundary line, and this is not considered as passed by driving to any such property. Driving along a boundary line is considered as driving within a single district until a crossing line is reached.

(*b*) Tour rides must always be made by the shortest road from place to place. In driving from one district into another adjoining it the pay must not be increased by driving through a third district.

(*c*) If a cab which is engaged for carrying passengers is detained for upwards of a quarter of an hour 30 öre (8.04 cents) additional may be demanded for each quarter.

(*d*) Taking up and putting off passengers (if desired by the hirer of the cab) along the road without deviating from the route does not entitle to increased pay.

(*e*) It is at the option of the person who has ordered a tour ride, at any time during the drive, to change the ride from tour to time riding. Pay for the tour is then made, and the ride by the hour commences from the moment of the changed order. If a party who has ordered a tour ride during the ride gives orders to deviate from the route, it is equivalent to an order for time riding and has to be paid for as such.

(*f*) When a cab is ordered to a place for taking up passengers, no pay must be demanded for driving to such place if it be within the district where the order is given.

The following extracted paragraphs from the regulations governing public cabs in Copenhagen may be of interest for a comparison of systems:

SECTION 1. No one must, on a public street, square, or road in this city or on the area belonging thereto, solicit hire with cabs or any similar vehicles unless he has obtained a stand as prescribed by the regulations, which he then in every way and manner has to obey.

SEC. 4. No one must stop to solicit hire with a cab or similar vehicle at any other place than his assigned stand, excepting at theaters, public places of amusement, societies or clubs, railway stations, steamships, or at other similar places, and then only at the hours allowed and according to the rules issued by the officiating police authorities. Hackney coaches not embraced within these regulations must only appear at the last-named places when previously engaged at home, and must by no means solicit hire while driving through the streets or roads.

SEC. 5. The cabs are arranged at the halting places by order of the police. The rule is that the carriage which comes first each day is assigned the first place in the row, if the cabs are arranged in rows, and the place to the right if they are arranged side by side. When the cabs are placed side by side, each one retains its place during the day. If they are placed in rows, the row is kept closed, and the place of each cab driving away is occupied by the one next behind, and by each returning cab taking the first vacant place in the row. The drivers of the cabs who are found at a halting place must immediately obey an order for a ride and are not permitted to excuse themselves with being previously engaged by anyone. It is at the option of anybody ordering a cab to choose any one he likes. If he makes no choice, the carriage to the right, or, if the cabs are placed in a row one behind the other, then the foremost, has the first turn. The next turn then comes to the vehicle having its place on the left side or just behind the one driving away.

SEC. 6. At stands on streets or roads the crib must not be left behind when the cab leaves.

SEC. 7. The chief of the police determines from and to which hour a stand must be occupied when the cab is not engaged.

SEC. 8. On extraordinary occasions the right is reserved to the police to give orders to evacuate any public or private cab stand, and, in such an event, the occupants must be content with the stands temporarily assigned them.

SEC. 9. Before a cab is put into practical use its number must be printed on the back part of the carriage in figures 5 inches high, and also be placed inside immediately behind the driver's seat. The cab must further be provided inside with a bell or some other arrangement prescribed by the police, by means of which the passengers may call the attention of the driver. In every cab, when it is in use, must at all times be suspended in a conspicuous place a copy of these regulations and of the fare tax.

SEC. 15. No one has a right to drive a cab unless he has first obtained a license from the police. Such licenses will not be granted to unreliable, disorderly, or inebriate persons, or to persons who can not furnish proof that they understand to drive and that they know the streets and roads of the city and its surroundings. When a license is granted, the police furnish the driver with a number and a chart, on which his number and name is written in full. The driver's name, number, and residence are entered by the police in a book specially arranged for the purpose. Change of residence or service must be reported to the police by the driver within twenty-four hours. The police may forbid a person otherwise qualified to drive cabs when sufficient reason is found for such prohibition or when he has repeatedly transgressed the rules laid down in these regulations.

SEC. 16. Cab-drivers must, when performing duty, appear in a decent and proper dress, as the police may deem suitable. It is their duty to be perfectly sober, to be present at the cab they are driving when it is at its assigned stand, and to be polite towards passengers. It is the absolute duty of the driver to give his name and the number of the cab when so asked by the police or by passengers. The cab-driver is forbidden to smoke while driving, to solicit hire by calling or beckoning to passers, and, if the cab is not in use, to sit on the seats inside.

SEC. 17. After each trip the driver must (when the passengers have alighted) immediately inspect the inside of the cab and deliver to the passengers whatever they may have left behind, and, provided this can not be done, then to deliver such articles, within twenty-four hours, at the police office or at the police station of the district in which the cab has its stand or in which its owner lives.

SEC. 18. A cab must not be occupied by more than five persons besides the driver (two children are considered as equal to one adult person), and the driver must not refuse taking up the said number of persons. No one is allowed to ride without permission of the person who has hired the cab. Persons in shabby clothing or who are in a state of evident intoxication have no claim to be conveyed in a cab, unless it is found necessary to save their lives and health. Passengers can demand transportation (as for pay, see above) of as many trunks, traveling boxes, and bags, and the like as can be placed on the cabman's seat and inside the cab, but can not demand the transportation of furniture or the like.

SEC. 19. The speed of driving should be a short trot, and the streets and roads chosen must be those which afford the shortest passage to the place of destination, whether the engagement be for a single tour or by the hour.

SEC. 20. Vacant cabs coming within the scope of these regulations must, while driving along, indicate that they are vacant by means of a metallic plate of the size of about 75 square inches, painted white, with the number of the cab printed in black figures, suspended at the right side of the seat of the driver.

SEC. 22. The pay may be demanded at the beginning of the ride. It is forbidden to ask higher fare than prescribed by the regulations or to solicit gratuities.

SEC. 23. Any dispute concerning payment is decided by the police sergeant nearest at hand. When such disputes arise, or when passengers think there is any ground for complaint for other reasons regarding the driving, it is the duty of the driver, when asked to do so, to drive them to the nearest police station, and thereafter, if so desired, to the original place of destination. The police sergeant in question then decides whether any pay is due to the driver, and, if so, how much.

By regulations of the police with regard to the street cars the conductors are, in the ordinary two-horse cars, only allowed to carry eighteen passengers inside below and eighteen on top, allowing for each passenger 18 inches sitting space. No passengers are allowed to stand inside. Only three persons are allowed on the rear platform, and none on the front platform of this style of cars. In the smaller one-horse cars, which are not adapted for carrying passengers on top, fourteen persons are allowed inside (with 16 inches sitting space for each individual) and four persons each on the rear and front platforms. These regulations are under police surveillance, and are strictly enforced.

(6) The before-mentioned different means of conveyance are considered satisfactory, both with regard to speed and cheap rates of fare, as well as in other respects, and are consequently patronized by the public to a great extent. The steam cars and one of the latest built tramway lines are not so popular or remunerative as the street cars of the city generally, but the latter pay the stockholders very good dividends. The cabs and the jaunting carriages (the latter only for the summer season) are supposed to yield their owners a fairly good income.

The more important provincial cities of this Kingdom endeavor to copy the well-tried systems of local transportation of the metropolis according to their requirements.

HENRY B. RYDER,
Consul.

UNITED STATES CONSULATE,
Copenhagen, July 1, 1891.

FRANCE.

BORDEAUX.

REPORT BY CONSUL KNOWLES.

Public transportation in the city of Bordeaux is carried on, and, in fact, monopolized, by an English joint-stock company of limited liability, which pays to the municipality so much for their charter, with the understanding and provision that they shall enjoy the exclusive privilege of running tram cars and omnibuses. The same company has a monopoly of public transportation in Lyons and many other large cities in France.

The branch offices of the company were established at Bordeaux in 1879. Their charter was granted January 1, 1880.

As an original guaranty of the company's carrying out the enterprise a deposit of $57,900 was deposited with the treasurer of the department of the Gironde previous to operations. At the completion of the laying of tracks, etc., $48,250 were returned. The balance was held.

The city, in granting the charter, reserved the right to decide as to the number of trams and omnibuses that shall remain in active service for the transportation of passengers. It further provides that, in the event of any dissatisfaction regarding fares that may arise on the part of those inhabitants, especially the working classes, who are obliged to go back and forth to their places of business, the same shall be reduced to the uniform rate of 2 cents a ride.

The cars of the Bordeaux Tramway and Omnibus Company differ from those more commonly seen in the United States, inasmuch as they carry passengers without (second class) as well as within (first class). From both front and rear platforms a semicircular stairway leads to seats ranged back to back along the roof, passengers being guarded at either side by an iron railing. When all passengers are seated and five remain standing on each platform no more are taken, while an automatic signboard upon the roof serves to indicate the fact that the car has its full complement.

The rates of fare are as follows: For a single ride from one extremity of the city to the other, irrespective of direction, first class (inside), 4 cents; second class (outside), 3 cents. Transfer tickets are given at nearly all points where there is an intersection of the line. In order to obtain one of these, the ticket for the original trip must be stamped by the employé issuing the transfer. The original ticket must be checked by the conductor giving the same with the day of the month and hour of the day. It entitles the holder to one transfer, and is scrutinized by an inspector before allotting transfer slip. Return tickets, good only for the day when issued, are given at 6 cents for inside seats and 5 cents for outside. Officers, soldiers, and sailors are carried at half fare and police and municipal officers free.

The cars and omnibuses begin running at 6 o'clock in the morning in summer and at 7 in winter, continuing at regular intervals until 10:30 p. m. The intervals between the departure of cars is regulated by the municipality; these vary from six to eight minutes.

In addition to the portion held by the city of the original sum paid by the company for its franchise, the city receives $48.25 for each car and omnibus in active service. Besides this, however, the municipality derives a certain annual revenue from the company through the octroi duties paid on oats, hay, straw, etc., consumed by the company's horses. It will, perhaps, be necessary to explain that in France certain merchandise entering the city limits from the neighboring country, as well as from abroad, is taxed as foreign importations are in America. For example, all wine, liquor, cheese, vegetables, etc., brought from the suburbs into Bordeaux are taxed to a greater or less extent for purposes of revenue. For the year 1889 the taxes or duties paid by the company to the city for oats, hay, and straw amounted to $7,290. By placing their stables at the extreme termination of the route the company might easily avoid this tariff. The city, however, for reasons quite evident, will not permit them to do so, an agreement being originally made to that effect in the granting of the franchise. Various other taxes increase this amount to $33,953 per annum, so that the annual revenue is visibly depleted thereby.

The expense of maintaining the director, underdirector, clerks, etc., amounts yearly to $9,693.02, which, added to general expenses, including salaries, repairs, rent, lighting, insurance, etc., further diminishes the profits.

For the year 1890 the receipts of the company equaled $585,462.12; expenses, $483,390.30, leaving a balance in their favor of $102,071.82.

The following figures show certain statistics furnished by the Bordeaux Tramway and Omnibus Company for the years 1889 and 1890: Mileage run—tramways, 1,844,184 miles in 1889 and 1,794,741 miles in 1890; omnibuses, 1,086,903 miles in 1889 and 1,091,175 miles in 1890; number of passengers carried, 16,465,009 in 1889 and 16,677,797 in 1890; average receipts per day—tram cars, $15.56 in 1889 and $13.82 in 1890; town omnibuses, $5.16 in 1889 and $5.32 in 1890; country omnibuses, $4.09 in 1889 and $4.31 in 1890; average receipts per mile—tramways, 23 cents in 1889 and 25 cents in 1890; omnibuses, 10 cents in 1889 and 11 cents in 1890; average number of horses, 1,200 in 1889 and 1,212 in 1890; stud (31st of December), 1,185 in 1889 and 1,187 in 1890; number of tram cars in stock on the 31st of December, 120 in 1889 and 120 in 1890; number of omnibuses in stock on the 31st of December, 136 in 1889 and 137 in 1890; average cost of forage per week, $2.36 in 1889 and $2.27 in 1890; shoeing per horse per week, 18 cents in 1889 and 18 cents in 1890.

All things considered, the service of the Bordeaux Tramway and Omnibus Company may be said to be quite satisfactory to the people. There exist at times many annoyances that would scarcely be tolerated in some of our American cities, where it would seem that surface-car accommodation

had reached almost perfection. The great majority of European cities have yet room for an immense deal of improvement as regards their respective systems of public transportation. Bordeaux is perhaps in advance of many others.

HORACE G. KNOWLES,
Consul.

UNITED STATES CONSULATE,
Bordeaux, July 20, 1891.

HAVRE.

REPORT BY CONSUL WILLIAMS.

I must confine my report to the city of Havre and its environs, because, having in my consular district upwards of one hundred cities or towns under municipal government, all of which have systems of cab service and from and between which stage lines form a close network throughout the district, a full report would be not only impracticable, but probably useless.

The city of Havre, as a municipality, is of small area, and includes a population of about 117,000, while studded around its borders are several cities and communes having separate governments, and yet geographically so united as to be like the several wards of an American city; hence Havre, as seen by the stranger and as enjoyed as a place of residence and business, properly includes a population of about 200,000.

Referring to the circular of inquiry and to its points by number, I report as follows:

(1) There is an omnibus line running daily between Havre and Étretat, a channel port 28 kilometers (17.4 miles) distant. The fare one way is 3.10 francs (60 cents); for the round trip, 6.20 francs ($1.20). The travel being quite moderate, this service appears satisfactory. There is also a line between Havre and St. Romain daily, the distance being 20 kilometers (12.4 miles). The fare one way is 1.50 francs (29 cents); for the round trip, 2.50 francs (49 cents). This service meets every requirement of its patrons. The omnibus lines above mentioned are individual enterprises, over which the city exercises no special control. Besides the above, there are horse cars for the level sections, the lines of which are 12,749 meters (7.9 miles) in extent, and reach the outside communes, steam-car service accommodating certain communes by local trains, and a railroad (a cable road) surmounting the slope about 300 feet in perpendicular height above the plain of Havre; the highlands are reached by a sharp ascent of 360 meters (1,180.8 feet). This cable road is a new enterprise started less than a year ago at a total expense of 472,146 francs ($93,124.18), and, while patronage is large, no dividend has as yet been declared, as the road has been so recently opened. The service is from 7:30 a. m. to 9 p. m., during which time one hundred

and fifty-six round trips are made, the fare for all classes being 10 centimes (2 cents) the trip. This road, being deemed a somewhat perilous venture, secured its franchise and is untaxed.

(2) The cable road, as well as the street-car company, is a limited corporation.

(3) The street cars have first and second class compartments, and the road is divided into sections, with fixed fare per section, with an increase for added distance. The fare is 10 centimes (2 cents) per section for second class, with 5 centimes (1 cent) increase for first class. The cars run every ten minutes, with extra service for special demands, and in winter run from 7 a. m. to 10 p. m., but in summer from 6 a. m. to 11 p. m. The capital stock, local and actual, of this street-car company is 2,233,028 francs ($430,974.40), and a local dividend of 10.1 per cent is declared yearly. I introduce the word "local" in order to explain that the company here is one of many under the same management, and the dividend is based upon the aggregate net earnings of all the general company's lines, and not upon those of any particular line.

(4) This company pays a yearly tax to the city of 18,000 francs ($3,474), and its rate of fare is regulated by the city.

The street-car fare is considered excessive, and the abolition of sections and the establishment of fares of 10 centimes (2 cents) for second class and 15 centimes (3 cents) for first class for all distances is no doubt near at hand.

(5) The cab service, also owned by limited companies, is taxed yearly 48 francs ($9.26) per cab, and is a one-horse service; but it is very prompt and efficient, as strong coach horses of fair speed are used and very comfortable cabs. The hack, or landau, service is confined to the liveries and private enterprise.

Cab rates for the run in the city are 1.25 francs (25 cents); by the hour, 2 francs (39 cents) from 6 a. m. until midnight. From midnight until 6 a. m. 2 francs (39 cents) are charged for the run, or 2.50 francs (49 cents) by the hour. When the time exceeds the even hours by five minutes, such excess is considered as a quarter of an hour; but if the excess does not exceed five minutes no charge for it is made.

Hand baggage, however large, is not charged, but parcels weighing 15 kilograms (33 pounds) is charged 15 centimes (3 cents), and heavier in proportion, while the driver is privileged to refuse to take any parcel weighing above 50 kilograms (110 pounds).

In case of prevailing snow or ice, cab fares may be increased 40 per cent, and for service on the hills, even if in the city limits, a like charge is allowed; but in this, as in all service, the law requires the driver to present his patron with a card containing the number of the cab and a schedule of charges.

(6) In conclusion, except as above noted, I believe local transportation to be well carried on, profitable to the promoters, and generally satisfactory to patrons.

Being a seaport, Havre has many daily and special steam excursions to surrounding ports, as Rouen, Tanearville, Honfleur, Trouville, etc. Fares are very cheap, being about 2½ cents for second class and 6 cents for first class per mile. The accommodations are good, and the time about 10 miles per hour. Times of departure depend somewhat on the tides, yet the steamers, being small, except in periods of extremely low water, leave at fairly regular hours.

I may add that, while the entire street-car service is under one management, it is effectually shorn of monopoly powers by being subject to the city government in its tariff.

O. F. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Havre, June 1, 1891.

LYONS.

REPORT BY CONSUL FAIRFIELD.

Every system of local public transportation mentioned in the list is employed in this district, except electricity. And in addition to omnibuses, tram cars, and steam cars, the River Saône, which runs through the city of Lyons, is also a highway upon which twenty boats ply back and forth, furnishing convenient passage up and down every five minutes for 3 miles of the route and every fifteen minutes for the 3 miles beyond. These boats are authorized to carry one hundred and seventy persons. They furnish most delightful transportation. The fare is 2 cents for each half of the full distance, except on Sundays and holidays, when the price is increased to 3 cents. For any distance traveled upon either half of the route the fare is the same.

The omnibuses, tram cars, and steam cars alike all furnish first and second class accommodation, as each passenger may prefer. Ordinarily there are seats on the top as well as inside, the former reckoned as second class, the latter as first class. But in good weather the outside seats are often preferred by those who are abundantly able to pay the higher fare charged for inside seats. They are occupied by ladies as well as gentlemen, and conveniences of ascent are always provided. These outside seats are not upholstered, but they are commonly so shaped as to be entirely comfortable.

The rates of fare in Lyons are 4 cents for first-class seats within any distance that the tram may run to the city limits and 6 cents if beyond; it is just half that for second class. The trams furnish sixteen first-class seats. Besides these, there are standing places for ten persons in the vestibules below and twenty-four seats on top. Fifty persons is a full load for two horses. In making a few ascents an extra horse is provided.

It should be understood that no one is allowed to stand on the inside at any price. In the United States it is sometimes said that "a street car is never full." Here it is; and no person is allowed to enter after the

number I have mentioned is reached; and if persons enter without permission the car is stopped and they are promptly ejected. Whatever the size of the car may be, a fixed number is allowed and no more. This often occasions delay to the late comers, but always comfort to those who secure passage. At each office tickets are secured numbered in the order in which they are given out. Those numbers are called as the tram stops, and the holders of the tickets are admitted as they appear; but if anyone fails to present himself when his number is called he loses his chance and must go back to the office for another number and wait for the next tram or for one still later, as the case may be. These tickets cost nothing; the fare is paid to the conductor only by those securing seats.

Omnibus and tram lines are generally owned by corporations, sometimes by individuals; never, so far as I have been able to learn, by municipalities.

The right of way for tram lines and other special privileges enjoyed by the corporations are ordinarily granted by the municipality. The municipality obtains its authority to grant these privileges generally from the department, the department having in the first instance obtained its right from the State, that is, from the nation. In a few instances the municipality has received its right directly from the State and not through the department. But, in any case, the corporation upon whom the franchise is conferred must be accepted and approved by the State; all this under the general law of the 11th of June, 1880, as administered by the minister of commerce and of public works.

Thus the State holds a sort of veto power, and sees to it that the corporation enjoying the franchise is reliable and worthy of public confidence. It holds the departments or the cities—to whichever it may have granted the power to confer such franchises upon any corporation—responsible for the fulfillment of all contracts entered into by companies, so far as is necessary to protect the public. So, after taking all possible pains to guard against the conferring of these franchises upon unworthy parties, it still looks to the department or the city to make good all losses or failure of whatever sort. Each department, in turn, holds every city receiving its authority direct from them to its responsibility to see to it that the public accommodation is secured by the faithful execution of all its contracts with individuals or corporations to whom such city may have granted franchises. The great end of the law and its administration is to see to it that the people's rights and conveniences are properly subserved.

The State, up to the present time, has received no direct income from the granting of these franchises, but the departments and the various cities have sublet the grants so as to secure generally some pecuniary return. In this city, for example, the concession has been for a compensation in money of a given sum payable quarterly. In Lille the grant to the company has been for a shorter time than that accorded by the State, the city expecting a pecuniary benefit to accrue after the expiration of the present grant to the company. In some cities the companies pay a percentage of their receipts.

The law of the Republic forbids that any tax, fine, or assessment of any sort shall be exacted from any company, except such as have been expressly agreed upon by the terms of the charter.

This city holds its grant of authority not from the department, but direct from the State. It concedes to corporations certain franchises, as seems to them good, subject to the highest law of the State. It has granted very large franchises to what is known as the General Omnibus and Tram Company of Lyons. The consideration is 80,000 francs a year in four equal quarterly payments. This grant was made nine years ago for a period of twenty-five years, and it is provided that, upon certain conditions, the grant shall be renewed for twenty-five years more.

Wherever omnibus or tram lines run beyond the limits of the city arrangements must be made with the various municipalities into which they extend. This is a concession which has always been readily granted and upon moderate terms.

Several lines of steam trams run from central parts of the city into the adjoining country. Within the city limits, as they run on the public streets at the same level as the horse tramways, they are not allowed to make a greater speed than 5 miles an hour, and less on curves.

Various omnibus lines run in every direction into the adjoining country; but these, having no special right of way and no special privileges, are independent of any control by the city, and pay only a general State tax. They fix their own prices, which are generally moderate. They all arrange for two rates of fare.

The facilities afforded by these conveniences for local transportation are such as to give a high degree of satisfaction to the public, and at the same time the investments are highly profitable to the corporations controlling most of them, and remunerative to all.

A strike on the part of the three hundred operatives of the General Omnibus and Tram Company of Lyons is just over. The chief demand was for more reasonable hours—not to exceed eleven hours and twenty minutes of labor each day. The city government and the general public were in sympathy with the strikers; and, after four days and a half, during which none of the omnibuses and trams of this company were allowed to run, the company yielded substantially everything which was demanded. No personal violence was used, and the cutting of a pair of lines and tugs was the only destruction of property. The quietness and general self-control seemed quite remarkable. The whole thing was managed through the officers of a syndicate of workingmen.

I have confined myself in this report chiefly to the arrangements existing in this city—a city, with its suburbs affected by the tram lines I have referred to, of 500,000 people. In the other chief cities of this consular district very similar arrangements exist, and everywhere throughout the district facilities for local transportation are very satisfactory.

Two general statements remain to be made:

(1) Where the same company in any city has different lines of cars, it is provided that a transfer ticket may be secured by the payment of 1 cent extra, thus making first-class fare 5 cents and second-class fare 3 cents.

(2) All persons belonging to the army pay one-half the regular price or as nearly that as may be, there being no arrangement made for divisions of a cent. All such persons are readily known by their army uniform.

EDMUND B. FAIRFIELD,
Consul.

UNITED STATES CONSULATE,
Lyons, July 1, 1891.

MARSEILLES.

REPORT BY CONSUL TRAIL.

The systems of public transportation that are employed in the city of Marseilles, urban and suburban, are omnibuses and horse cars, the former owned by individuals and corporations and the latter by a single corporation. There are fifty-seven different omnibus services, with rates of fare from 2 to 17 cents, according to distance, and the one horse-car company has eight different lines of track, with fares from 2 to 9 cents.

In return for the use of the franchise granted to the horse-car company, the municipality imposes a tax of 2¼ per cent upon the gross receipts of the company. It also controls the rates of fare, they being fixed at 1½ cents per kilometer (0.621 mile).

The omnibus lines are divided into two classes, according to their importance. On each omnibus of the lines of the first class a tax of $8 per month is collected, and on those of the second class $4 per month, paid quarterly and in advance.

The routes to be followed and the rates of fares are decided by the municipal administration, and they are obligatory upon the companies. The companies can, however, lower the fares, and on most of the lines the rates are below those prescribed by the mayor.

No complaint concerning the transportation companies has ever come to my notice, although the street cars are dirty and overcrowded. It must be borne in mind, in this connection, that the better class of people here make use of the cab service, which is really good and cheap, the fare being but 20 cents per course or 40 cents per hour.

The financial condition of the street-car or tramway company can be seen from the quotation of the Marseilles bourse of September 26, when a new issue of 5 per cent obligations or bonds were sold for 502, or two-fifths of 1 per cent premium on $100.

The population of the city of Marseilles is 406,919.

CHARLES B. TRAIL,
Consul.

UNITED STATES CONSULATE,
Marseilles, October 5, 1891.

PARIS.

REPORT BY CONSUL-GENERAL KING.

(1) The systems of public transportation in Paris and the department of the Seine are: Ordinary omnibuses drawn by horses; street cars drawn by horses; street cars run by steam engines without fire grate (Francq system), and with fire grate and without smoke (Rowan system); automotor street cars (Mekarski compressed-air system); automotor street cars driven by electricity (this system is now on trial on the line from Levallois-Perret to the Madeleine); a street-car line from the Place de la République to Belleville (funicular cable system); a belt-line railroad following the inside of the city fortifications; the Vincennes Railroad, running through the eastern suburb of Paris; the Sceaux Railroad, running through the southern suburb; and the Western, Northern, Eastern, Lyons, and Orleans railroads, each traversing a number of localities in the environs of Paris. To the above may be added the Grand Belt Railroad, although it is in part outside the department of the Seine.

(2) The franchise for public transportation in Paris was granted by the municipal authorities to the General Omnibus Company (Compagnie Générale des Omnibus) in the year 1860; subsequently this company obtained the franchise of several lines of street cars. The lines connecting the interior of the capital with the suburbs have been granted under franchise to two companies—the Northern Street-Car Company and the Southern Street-Car Company. Finally, the railroads of Nogent and l'Etoile-St. Germain have been granted to special companies.

(3) Inside of Paris the rates of fare are uniformly 30 centimes for first class and 15 centimes for second class, irrespective of the distance traveled on the same line; the first-class rate once paid also gives the right to a first-class ticket, called "correspondance," enabling the passenger to continue the trip on a corresponding or connecting line. Outside of Paris the price of fare is variable and is calculated on the maximum at the rate of 10 centimes per kilometer for first class and 7½ centimes per kilometer for second class. The companies generally control the collection of the fares by means of a ringing dial, which the conductor rings each time that a passenger enters the omnibus or car. Each company furnishes monthly a statement showing the number of trips made and passengers carried.

(4) The city of Paris collects from the General Omnibus Company a tax called "droit de stationnement," amounting to 2,000 francs annually for each vehicle in circulation. For this purpose each vehicle bears a number controlled by the city administration. In addition to the above tax, the city has the right to one-half of the profits when the dividend attributed to the stock shares of the company exceeds 8 per cent of the value of the share, each share being of the capital value of 875 francs. For the new lines of

street cars, under the franchise granted by decree of June 13, 1891, a tax of 30 centimes is collected for each round trip.

(5) The tariff of fares is fixed by the clauses and conditions of the franchise. The local authorities also fix the number of trips and the time-table, and compel the companies to follow certain disadvantageous routes, which would be given up if the obligation to work these unremunerative routes were not imposed on the companies by the prefectoral or municipal authorities. The railroads and street cars are placed under the control of the State, which fixes the number of trains and the time-tables.

(6) The facilities afforded by the omnibus and street-car companies are, as a general thing, satisfactory to the public. It happens, however, that at certain hours of the day, notably on Sundays and holidays, the number of vehicles is insufficient on some lines. The street-car companies are, as a rule, financially profitable and able to remunerate the capital employed in the construction of the tracks and the rolling stock. The same may be said of the General Omnibus Company.

ADAM E. KING,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Paris, July 1, 1891.

GERMANY.

AIX LA CHAPELLE.

REPORT BY CONSUL ZEIGLER.

This is the only city in my district where there is a street railway, horses only being used. It is owned and operated by a corporation, which pays a yearly license to the city of 500 marks. It also pays 6¾ per cent of its profits to the city and 3 per cent to the state (Prussia). They are compelled to carry police officers free of charge and army officers and school children at one-third the regular rates. The rates of transportation are fixed by the company and city jointly. The facilities are satisfactory to the people and profitable to the corporation. The rates charged are 15 pfennigs for any point within the city or suburbs, with the exception that to Vaals (about 4 miles) 40 pfennigs are charged. Commutation tickets are issued at a discount of 20 per cent.

There are no public omnibuses, carriages which belong to private parties being used instead. A yearly license of 25 marks to the city is charged for each carriage and horse, which are also taxed, as other property, according to value. Charges to any part of the city are as follows: For one person, 70 pfennigs; two persons, 90 pfennigs; three persons, 1.20 marks; four persons, 1.30 marks; for each trunk to any part of the city, 30 pfennigs; by the hour—one or two persons, 2.60 marks; three or four persons, 3 marks.

Charges are fixed by the owners and city jointly, and it is seldom that overcharges are demanded. As the prices charged are very low, the profits are quite small. No compulsory services are required by the city.

S. B. ZEIGLER,
Consul.

UNITED STATES CONSULATE,
Aix la Chapelle, June 10, 1891.

BERLIN.

REPORT BY CONSUL-GENERAL EDWARDS.

(1) The local passenger traffic of Berlin is accommodated by an elevated railway (Stadtbahn) which extends through the city from east to west in a winding line upon a structure which crosses the city streets at a convenient elevation, offering rapid transportation in steam cars, and by four street-car companies, namely: The Great Berlin Street-Car Stock Company, whose network extends through the greatest part of the city; the New Berlin Horse-Car Company, which has lines running from almost the central point of the city (Alexander Platz) to two suburbs—Weissensee and Lichtenberg; the Berlin Horse-Car Company (I. Lestmann & Co.), whose lines extend to the west—between Kupfergraben and Charlottenburg, Kupfergraben and the Zoölogical Garden, and Moabit and Charlottenburg; the Berlin Steam Street-Car Company, whose line extends outward from the western city limits. Of these the third began business on the 22d of June, 1865, and is therefore the oldest Berlin street-car enterprise. There are also two omnibus companies, whose wagons do not go beyond the city limits. The Stadtbahn (elevated city railway) begins within the Berlin city limits and ends in the suburb of Charlottenburg. In connection with this are two other railways, called the northern and southern rings, which, respectively, connect the suburbs north and south of the city, the Stadtbahn being a sort of irregular diameter of this circular railway. While the steam street cars do not come far into the city, all the ordinary street-car lines extend outward to the suburbs.

(2) The Stadtbahn (elevated railway) belongs to the Prussian government. Of the street-car companies the Great Berlin Street-Car Stock Company and the New Berlin Horse-Car Company are stock companies. The Berlin Horse-Car Company is a limited-liability stock company. The Berlin steam street-car line belongs to a business firm. Both omnibus lines belong to stock companies, of which one confines itself to the transportation of passengers, while the other also forwards packages and letters.

(3) The rates of fare vary, and the various lines of the different companies are divided into fixed sections. The lowest rate is 10 pfennigs (2.4 cents) and each increase is 5 pfennigs. On the Stadtbahn (elevated railway) there are two classes of cars, for which the prices are different; outside and

inside places cost the same. With the omnibuses, however, the roof seats are cheaper in that for these the price is limited to 10 pfennigs, irrespective of distance. The rates of fare are subject to the approval of the local police departments, which in turn must be indorsed by the municipal authorities. Any charge exceeding the fixed rates is punishable. A reduction of the rate is permissible, but not customary.

(4) All the street-car companies, so far as they use the municipal streets, are financially responsible to the city, either in the form of natural services or cash payments. By natural services is meant the making of such companies responsible for part of the cost of widening streets and requiring them to pave, and supply the necessary materials for such paving, the space between and for a certain distance outside the rails and to keep the same clean and in order. The New Berlin Horse-Car Company and the Berlin Horse-Car Company (I. Lestmann & Co.) are responsible to the city for 4 per cent of their gross receipts. The Great Berlin Street-Car Company must pay at least 4 per cent of its gross receipts, but this rate increases with the receipts. At present it pays 7½ per cent of the gross receipts. In addition, to avoid the obligation to keep the pavement in good order during the concession period, a pavement rent has been adopted which represents the estimated expenses to be incurred for this purpose during the concession period, divided by the number of years. The omnibus companies are not required to make payments, nor have payments been demanded from the Berlin Steam Street-Car Company, as the part of its line extending within the city limits is so small that it has not been taken into account. The neighboring communities which are connected with the city by street-car lines have, on the contrary, abstained from making any claim to a part of the net earnings or any other payment, though the natural-service obligation for laying, cleaning, and repairing the pavement remains in force.

(5) The power of the local authorities in respect to transportation does not extend to the Stadtbahn, which is state property, but applies only to the street-car and omnibus companies. This power is based upon Prussian law, namely, the trade regulations of June 21, 1869 (section 76). Special services, *e. g.*, the transportation of military persons, prisoners, etc., are not required. In the way of agreement, however, cheaper rates have been obtained for scholars, police, and postal officials, if these take out monthly tickets in advance. Persons holding these cards do not pay according to the distance traveled, but a fixed sum of 3 marks (72 cents) per month. Suburban communities have as yet abstained from making any demands in regard to the fixing of rates of fare within their limits, although their right to do so can not be denied.

(6) Of the various transportation companies the following are the financial result for the year 1890: The Great Berlin Street-Car Company declared a dividend of 12½ per cent; the Berlin Horse-Car Company (I. Lestmann & Co.) declared a dividend of only 1 per cent; the business of the New Berlin Horse-Car Company and the Berlin Steam Street-Car Com-

pany showed no gains; of the two omnibus companies the elder earned 12½ per cent net and the younger 10 per cent net, which result with the latter, however, was reached by means of the package and letter business. The financial results of the Stadtbahn business are not separately given in the official reports, and hence can not be stated.

The facilities afforded seem to be satisfactory.

W. H. EDWARDS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, July 8, 1891.

BREMEN.

REPORT BY CONSUL STARKLOFF.

In the cities of Bremen and Bremerhaven there are eight different lines of street cars, belonging to three separate companies or corporations. Some of them are two-horse cars, others one-horse cars. There is also a two-horse omnibus line. A line of electric street cars of the Thomson-Houston system is now in course of construction.

All these lines are the property of corporations, and their charges are as follows: The one-horse car line runs a distance of 9 kilometers (1 kilometer= 109⅓ yards) and charges 20 pfennigs (5 cents) for the full distance and 10 pfennigs (2½ cents) for any distance not extending over one-third of the full length; a two-horse car line, also extending 9 kilometers, charges 30 pfennigs (7½ cents) for the full distance and 10 pfennigs for any distance not extending over one-third of the full length; the two-horse omnibus line runs a distance of 4 kilometers and charges 10 pfennigs (2½ cents) for the full distance or any part thereof.

Each conductor of all these lines has a bundle of paper tickets, from which they tear off one, handing the same to the passenger after receiving the fare charged. The conductor has to cancel the ticket with a blue pencil before handing it to the passenger.

The municipalities do not obtain from the corporations to whom they have granted the rights any return in the way of taxes, shares, profits, or money whatsoever.

The local authorities have decided upon a maximum transportation fare, which the transportation corporations can not exceed. They also compel them to keep that part of the street which the corporations occupy in perfect repair. Otherwise the local authorities do not determine the charges for transportation.

The facilities afforded have, so far, been satisfactory to the people.

The growing population of Bremen and Bremerhaven, however, requires other means of transportation, which the electric road, when finished, will amply supply.

There are reasons to believe that these transportation corporations are a financial success. How large their profits are I am unable to state.

HUGO M. STARKLOFF,
Consul.

UNITED STATES CONSULATE,
Bremen, July 6, 1891.

COLOGNE.

REPORT BY CONSUL WAMER.

Horse cars only are used in Cologne. These are leased to a stock company (Strassenbahn-Gesellschaft of Cologne) for a period of thirty years by the municipality.

The rates of fare, which are agreed upon by the municipality and the company, are not controlled by distance and are not uniform, the minimum being 2.38 cents and the maximum 5.9 cents. The rates are, accordingly, 2.38, 3.57, 4.76, and 5.9 cents.*

The municipality receives from the company annual payments amounting to the following sums: Up to and including the year 1888, $666; up to and including the year 1893, $1,332; up to and including the year 1916, $2,665, at which time the lease expires. Furthermore, after payment to the managers of the company of a bonus and 5 per cent to the stockholders, the municipality receives 15 per cent of the residue. At the end of the lease (1916) the municipality comes into possession of the various lines of the company, with the exception of the rolling material, buildings, and ground, which, however, the municipality reserves to itself the right to purchase.

The rates of fare, as above stated, are determined by the municipality and the company. The company may be compelled by the municipal and police authorities to build lines which are deemed necessary. No new lines, however, can be built by the company without the consent of the municipality. All other services are carried out in conformity with the existing contract with the municipality.

The facilities afforded seem to be satisfactory to the public. The result of the working of the road is shown by the following dividends paid in the last three years: In 1888, 6 per cent; 1889, 6 per cent; 1890, 5½ per cent.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, June 12, 1891.

*In reducing the amounts to American money the rate of 23.8 cents to the German mark has been used.

DRESDEN.

REPORT BY CONSUL PALMER.

The annexed table gives the receipts, length of lines, number of trips and distance traveled, number of cars and horses, and number of passengers carried by the company called Tramways Company of Germany (limited) in the city of Dresden during the years 1888, 1889, and 1890.

The cost of uniforms supplied by the company is: One cloak, 45 marks; one coat, 22 marks; one pair of trousers, 10 marks; one vest, 6 marks; one cap, 2.50 marks; total, 85.50 marks. The men are taxed at the rate of 5 per cent on their wages for uniforms, of which they receive one suit a year, generally about Whitsuntide.

The horses make two tours each day of 7½ miles each. The conductors work twelve hours per day on an average. Their pay varies from 2.50 to 3 marks per day, according to length of service. The drivers get 2.70 to 3 marks per day, according to length of service.

The average cost of a horse is 820 marks.

Table showing the operations of the street-car lines in Dresden during 1888, 1889, and 1890.

Lines.	Receipts.					
	Per month.	Per day.	Per car per day.	Per horse per day.	Per car per mile.	Per horse per mile.
Blasewitz:	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1888	363,119.90	992.14	70.87	7.75	1.04	0.52
1889	400,235.00	1,096.54	73.10	8.00	1.05	.53
1890	432,718.65	1,185.33	76.48	8.22	1.09	.55
Plauen:						
1888	114,645.30	313.24	62.65	7.12	1.01	.51
1889	126,297.15	346.02	69.20	7.69	1.09	.55
1890	135,894.10	372.31	74.46	8.27	1.15	.58
Löbtau:						
1888	85,208.65	232.81	51.75	6.47	.90	.45
1889	90,883.35	249.00	55.34	6.73	.94	.47
1890	102,153.61	279.85	55.91	6.99	.97	.49
Waldschlösschen:						
1888	181,064.50	494.71	70.67	7.85	1.10	.55
1889	187,934.55	514.89	73.55	8.17	1.09	.55
1890	194,732.45	533.54	76.22	8.21	1.12	.56
Arsenal:						
1888	241,409.60	659.58	73.29	8.04	1.19	.60
1889	250,016.42	684.98	76.11	8.46	1.20	.60
1890	259,004.10	709.59	70.96	8.44	1.15	.58
Zoölogischer Garten und Strehlen:						
1888	83,214.35	227.36	64.96	7.10	.97	.56
1889	95,818.95	262.52	65.63	7.29	.99	.56
1890	100,917.95	276.48	61.44	6.01	.88	.49
Neustädter Bahnhöfe:						
1888	95,409.30	260.68	52.13	8.14	.89	.89
1889	107,719.65	295.12	59.02	8.68	.95	.95
1890	109,278.35	299.38	46.08	6.96	.70	.70

Table showing the operations of the street-car lines in Dresden, etc.—Continued.

Lines.	Receipts.					
	Per month.	Per day.	Per car per day.	Per horse per day.	Per car per mile.	Per horse per mile.
Pieschen:	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1888	104,337.60	285.07	71.26	7.13	1.04	0.52
1889	129,540.40	354.90	70.98	7.72	1.09	.55
1890	150,782.60	413.10	75.11	7.51	1.00	.50
Albertbrücke:						
1888	201,600.70	550.82	64.80	11.48	.96	.96
1889	238,263.80	662.78	62.17	11.45	.96	.96
1890	262,675.65	719.65	59.97	11.07	.96	.96
Striesen:						
1888	232,484.25	685.20	52.93	10.59	.80	.80
1889	252,498.40	691.78	53.21	11.16	.84	.84
1890	259,977.20	712.25	54.79	10.79	.82	.82
Total:						
1888	1,702,494.15	4,651.61	64.16	8.23	.99	.61
1889	1,881,841.27	5,155.74	65.68	8.58	1.00	.62
1890	2,025,509.26	5,549.30	64.15	8.50	.98	.62
Wilder Mann (temporary omnibus line), 1890	17,374.60	47.60	19.04	2.65	.42	.21

Lines.	Length of line.	Trips.		Distance traveled.	
		Per month.	Per day.	Per month.	Per day.
Blasewitz:	*Miles.*	*Number.*	*Number.*	*Miles.*	*Miles.*
1888	4.47	77,918	213	348,293	952
1889	4.47	85,304	234	381,308	1,045
1890	4.47	88,508	243	395,630	1,084
Plauen:					
1888	1.86	61,066	167	113,582	310
1889	1.86	62,316	171	115,905	318
1890	1.86	63,382	174	117,890	323
Löbtau:					
1888	1.76	53,602	146	94,339	258
1889	1.76	54,682	150	96,240	264
1890	1.76	59,822	164	105,286	288
Waldschlösschen:					
1888	2.50	66,246	181	165,615	452
1889	2.50	68,972	189	172,430	472
1890	2.50	70,236	192	175,590	478
Arsenal:					
1888	3.12	64,843	177	202,310	553
1889	3.12	66,928	183	208,815	572
1890	3.12	72,044	198	224,776	616
Zoölogischer Garten und Strehlen:					
1888	1.50	15,299	42	22,948	236
	2.50	25,340	69	63,350	
1889	1.50	15,462	43	23,193	266
	2.50	29,524	81	73,820	
1890	1.50	17,438	48	26,157	374
	2.50	35,396	97	88,490	
Neustädter Bahnhöfe:					
1888	1.66	64,572	176	107,189	293
1889	1.66	67,660	185	112,315	308
1890	1.66	93,096	255	154,538	423

Table showing the operations of the street-car lines in Dresden, etc.—Continued.

Lines.	Length of line.	Trips.		Distance traveled.	
		Per month.	Per day.	Per month.	Per day.
Pieschen:	*Miles.*	*Number.*	*Number.*	*Miles.*	*Miles.*
1888	2.15	46,540	127	100,061	274
1889	2.15	55,608	152	119,544	327
1890	2.65	63,328	174	149,858	412
Albertbrücke:					
1888	3.30	63,346	173	209,041	571
1889	3.30	75,708	208	249,836	684
1890	3.30	82,662	227	272,734	748
Striesen:					
1888	3.79	77,116	211	298,269	798
1889	3.79	79,498	218	301,297	826
1890	3.79	84,070	230	318,625	874
Total:					
1888				1,718,997	4,697
1889				1,866,583	5,115
1890				2,071,219	5,674
Wilder Mann (temporary omnibus line), 1890	3.10	13,418	37	41,595	114

Lines.	Cars in use.	Horses at work.	Passengers carried.	
			Per month.	Per day.
Blasewitz:	*Number.*	*Number.*	*Number.*	*Number.*
1888	14	128	2,092,430	5,717
1889	15	137	2,351,734	6,443
1890	15½	144	2,679,643	7,341
Plauen:				
1888	5	44	849,158	2,320
1889	5	45	923,612	2,530
1890	5	45	1,000,265	2,740
Löbtau:				
1888	4½	36	583,113	1,593
1889	4½	37	632,448	1,733
1890	5	40	743,311	2,037
Waldschlösschen:				
1888	7	63	1,142,079	3,120
1889	7	63	1,196,381	3,278
1890	7	65	1,365,813	3,743
Arsenal:				
1888	9	82	1,553,075	4,243
1889	9	81	1,619,227	4,436
1890	10	84	1,806,077	4,948
Zoölogischer Garten und Strehlen:				
1888	3½	32	496,218	1,356
1889	4	36	572,668	1,569
1890	4½	46	621,687	1,703
Neustädter Bahnhöfe:				
1888	5	32	600,847	1,641
1889	5	34	692,712	1,898
1890	6½	43	942,684	2,583
Pieschen:				
1888	4	40	654,977	1,789
1889	5	46	816,180	2,236
1890	5½	55	1,048,657	2,873

Table showing the operations of the street-car lines in Dresden, etc.—Continued.

Lines.	Cars in use.	Horses at work.	Passengers carried.	
			Per month.	Per day.
Albertbrücke:	*Number.*	*Number.*	*Number.*	*Number.*
1888	8½	48	1,317,809	3,601
1889	10½	57	1,588,335	4,269
1890	12	65	1,845,808	5,057
Striesen:				
1888	12	60	1,501,019	4,101
1889	13	62	1,629,643	4,465
1890	13	66	1,900,105	5,205
Total:				
1888	72½	565	10,790,725	29,481
1889	78½	601	12,007,098	32,896
1890	86½	671	14,051,804	38,496
Wilder Mann (temporary omnibus line), 1890	2½	18	97,757	267

AULICK PALMER.
Consul.

UNITED STATES CONSULATE,
Dresden, June 16, 1891.

FRANKFORT.

REPORT BY CONSUL-GENERAL MASON.

(1) The public transportation system of Frankfort includes horse cars, electric cars, steam tram cars, and one small line of omnibuses. The horse-car lines are four in number, but are all under the control of a single company known as the Frankfurter Trambahn Gesellschaft. This company is of Belgian origin, and built its first street railroad in this city in 1872. The company at present owns and operates 22.822 kilometers of street railroad, employs one hundred and thirty conductors, one hundred and thirty drivers, and has in service one hundred and twenty-eight cars and four hundred and fifty horses. One-horse cars are exclusively used. The omnibus line above mentioned belongs to the street-car company, and is not of sufficient importance to require further mention in this report.

(2) All the city and suburban lines of horse, steam, and electric cars are owned by incorporated companies; but their rates of fare, as well as hours and methods of service, are strictly controlled by the municipality.

(3) There is no absolute relation between distance and the amount of fare charged; but a new schedule is in preparation, to be put into practice within the present year, in which the fare shall be in exact proportion to the distance traveled. At present the roads are divided by certain principal halting stations into sections, and the fare is increased by 5 pfennigs (1¼ cents) as the passenger passes each additional section. The lowest fare charged for any distance is 10 pfennigs (2½ cents); for this one may travel

about half a mile. Beyond that distance or thereabouts one passes into the next zone or section, and the fare is increased to 15 pfennigs (3¾ cents), and in the next section to 20 pfennigs (5 cents), which is the maximum from one terminus to another of any street-car line which crosses the city. Roughly stated, a 5-cent fare entitles the passenger to a ride of about 2 miles in Frankfort.

(4) The municipality exacts annually from the several companies the following monetary returns for the franchises which are granted to them respectively:

(*a*) From the horse-car company, which operates four connecting or corresponding lines of cars with tracks aggregating about 13 miles in length, a fixed yearly rental of $7,140, plus 6 per cent of the gross receipts of the company and half of all its net earnings (profits) above 10 per cent of the same. The gross earnings of the horse-car company in 1890 were 1,420,642 marks. Six per cent of this sum would be 85,230 marks, or $20,284. The revenue derived from the Trambahn Gesellschaft by the municipality last year was therefore $27,424, plus half of 90 per cent of the net profits of the company, whose gross earnings for the year were $338,112.79. What proportion of this sum was net profit and had to be divided with the city government I have no means of ascertaining.

(*b*) The electric tram-car line (trolley system), which runs from Frankfort to Offenbach, a distance of 5 miles, pays the municipality of Frankfort 3 per cent of that part of its gross earnings which is proportionable to the portion of its line which is within the corporate limits of the city. In view of the limited business of this line during its first two years, its contribution to the city for the years 1889 and 1890 was remitted by special enactment, but the arrangement above stated is the one under which the road was built, and its conditions will in future be enforced.

(*c*) The Frankfort-Eschersheim steam tramway line, which runs from Frankfort to Eschersheim, a distance of 3 miles, two-fifths of which distance is within Frankfort city limits, earned 87,262 marks ($20,768) in 1889. For its franchise the city charges 2 per cent of such part of its gross earnings as is proportionate to the two-fifths of its line which are within the city limits.

(*d*) The Frankfort Waldbahn is a system of steam tram lines which leads from the lower bridge over the Main through a large wood, or park, several miles in extent to Schwanheim and Isenburg. The road has three branches, two terminating at the points above named and a third at Niederrad, the whole aggregating in length about 12 miles. The park belongs to the city of Frankfort, so that five-eighths of the whole Waldbahn system is built upon land belonging to the municipality. For its franchise the company accordingly pays 2½ per cent of five-eights of its gross earnings.

(5) The charges for transportation and the hours and methods of service on all the lines are under the control of the municipality. Whenever the tariff or running schedule is changed, the new plan must be submitted to the president of police, and, when approved, they must be published in the official journal. The authorities also compel all the local transportation companies to run cars for the accommodation of the public early in the

morning and late at night, at hours when the service is not profitable. On the steam tram line to Eschersheim, a distance of 3½ miles, the fare is 5 cents. The electrical line from Frankfort to Offenbach comes into direct competition with an old and well-managed steam railway, and is thereby forced to put its fares for the entire ride of 5 miles at 5 cents and 7½ cents for the round trip.*

(6) As regards the electric and steam suburban roads, it may be broadly stated that the facilities offered by them are reasonably satisfactory to the people. Frankfort is built upon a smooth river plain, so that the horse-car lines are nearly level, and one horse can readily draw an ordinary car, which has sixteen inside places for passengers and ten on the two platforms.

The American "bobtailed" car is unknown here. Passengers are not allowed to stand in the aisle holding to the straps, except in case of a severe storm, and the number of persons to be carried is limited rigidly to the number of places above designated, viz, twenty-six on a full-sized car. In so far as concerns cleanliness, speed, and convenience of construction, the horse cars in Frankfort leave but little to be desired. From the standpoint of the public their management has two defects which are particularly annoying to ladies. The first of these is the fact that the five passengers who are allowed to occupy the rear platform are usually smokers and often corpulent, and, as exit and entrance from and to the car must always be by that platform, ladies are often obliged to squeeze their way uncomfortably through the stubbornly planted detachment of smokers which occupies that portion of the car. The other defect is that the cars stop only at prescribed halting stations on the line, and between these points the driver and conductor pay no attention to signals, however urgent. Moreover, there is a rigid German inflexibility of movement in every detail of the service which grates harshly upon the feelings of foreigners, who are accustomed to regard street cars as institutions for the convenience of the public.

In this country car-drivers and conductors are usually young or middle-aged men who have served in the army, and learned there the lesson of absolute, unquestioning obedience to orders. The schedule fixes the moment when the car shall start on each trip, and when that moment arrives the car will start, although half a dozen ladies may be within 50 feet of the platform and hurrying to reach it. Similarly, at the halting stations the car will stop long enough to permit the passengers on board to disembark and those in waiting to enter, but as for waiting even ten seconds for a belated woman or aged person to cross the street that is quite outside the prerogative, or at least the practice, of the conductor. The consequence is that the horse cars in Frankfort are unpopular with the well-to-do classes, who make very little use of them, preferring to use their own carriages or the cheap and excellent cabs, which are abundant and good throughout the city.

The horse-car system is prosperous and profitable. Notwithstanding the heavy taxation to which it is subjected by the municipality, it pays regular dividends; and the shares of the company, which have a face value of 100

marks, are quoted to-day on the bourse at 222 marks. The Waldbahn (steam tram) is a new enterprise, having been in operation but little more than two years. Its shares are worth 102, so that it pays expenses and is believed to have a prosperous future. The steam-tram line to Eschersheim has but a limited patronage and is not yet profitable. The electrical road to Offenbach, as has been already explained, suffers by the strong competition of a railroad, which not only greatly reduces its patronage, but obliges the electrical company to fix its fares below the limit of profitable management. One cent per mile is not a profitable rate, unless the volume of business is large, and it will be many years before the Offenbach-Frankfort electrical line may fairly be expected to pay substantial dividends.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, May 27, 1891.

HAMBURG.

REPORT BY CONSUL JOHNSON.

The systems of local public transportation in use in the city of Hamburg and its suburban districts comprise horse cars, steam cars, and steamboats, but no cable cars or electrical railways.

Of all the lines of horse cars, steam cars, and steamboats in use in Hamburg there is only one line which is not controlled by a private corporation. This line is the so-called connecting railway (Verbindungsbahn), which is owned by the Prussian government and managed as part of the royal Prussian railway system. Its principal purpose is to connect the different railway lines entering Hamburg with each other, but it also serves in a great measure for the purposes of local transportation. About fifty trains are run on this railroad each way daily, and on Sundays and festival days this number is increased. There are five stations on this road, and the trip over the entire route occupies twenty minutes. The rates of fare on it are as follows:

Description.	For two stations.	Longer distances.
Single journey:	*Pfennigs.**	*Pfennigs.**
First class	20	35
Second class	15	20
Third class	10	15
Round trip:		
First class	35	50
Second class	25	35
Third class	15	25

* 4 pfennigs = 1 cent.

The municipality of Hamburg does not share in any profits of this line, nor does it control its management in any way. The facilities afforded are satisfactory, and the line is profitable.

The connecting railway is the only regular steam railway used for purposes of local transportation in Hamburg, the rest of the roads being street railways on which horse power is mostly used. Only one line, running to the suburban city of Wandsbeck, uses steam as a motor. On some of the routes a five-wheeled car is employed, which can be used both on streets having a track and on those that have none. When the car runs on the track the fifth wheel is lowered by means of a lever, and this wheel keeps the car on the track; but when the driver wishes to leave the track he simply raises the additional wheel, and he can drive over streets without tracks without any difficulty.

All these street railway lines are the property of private corporations, who operate them subject to the control of the municipal government.

One of the horse-car routes is called the "belt route" (Ringbahn), and runs almost in a circle around the inner city, a distance of more than 4 English miles, on which there is a uniform fare of 10 pfennigs (2½ cents) for any distance. The other routes are divided into sections of 1,250 meters (a little more than three-fourths of an English mile), and a fare of 5 pfennigs (1¼ cents) is charged for each section, the lowest fare collected, however, being 10 pfennigs.

All the companies have to pay to the municipality a tax of from 1 to 1.4 pfennigs per passenger carried. They have to keep the streets in repair inside of their tracks and to a distance of from 1 to 2 feet outside of the same; besides, they have to pay all ordinary taxes levied by the city. At the expiration of the charter of these companies their tracks become the property of the municipality.

The facilities afforded by the street-railway companies of Hamburg can hardly be called satisfactory in all respects. The cars are small and to a great extent poorly constructed, and there are too few of them run on each route. The companies managing them claim that the burdens imposed upon them by the municipality are so great that they can not afford to give the public better accommodations. The dividends paid on the capital stock of the company owning nearly all the street-railway lines in Hamburg amount to from 5 to 5½ per cent annually.

In addition to these railway lines, a good portion of the local transportation in and about Hamburg is done by little steamers plying on the rivers Elbe and Alster, also owned by private corporations, who mostly charge a uniform fare of 10 pfennigs (2½ cents) for any distance in the harbor or on the Alster River. They are conducted under the strict supervision of the municipality, and are subject to special and general taxation. Their service is satisfactory, but their business is not very profitable.

CHAS. F. JOHNSON,
Consul.

UNITED STATES CONSULATE,
Hamburg, September 2, 1891.
No. 139——4.

HANOVER.

REPORT BY CONSULAR AGENT MURPHY.

(1) The local passenger traffic of Hanover is accommodated by one hundred and seventy-four public "droschkes" (two-horse cabs), each of which is numbered; the lines of street-car companies, of which the total length is 14.46 English miles; and six omnibus lines.

(2) The droschkes are owned by private individuals, but are subject to strict police control; the street-car lines are the property of two stock companies—the Continental Horse-Car Stock Company and the Tramways Company of Germany (limited). The first mentioned, which owns in Hanover the lines Herrenhausen-Döhren and Linden-Pferdethurm, as well as several lines in Dresden, was founded in the year 1871. In the year 1879, however, it transferred its business in Hanover, as well as in Dresden, to Mr. Parish, an American engineer, for the whole duration of its concession (until 1917). The annual rent was fixed at 4½ per cent on the company's capital (2,580,000 marks), which rate was to increase one-half of 1 per cent each five years until a maximum limit of 6 per cent had been reached. All other street-car lines in Hanover belong to the Tramways Company of Germany (limited). The first concession for this company was acquired by the above-mentioned American engineer, Mr. Parish, in the year 1878 from Engineer Boyaert, to whom the concession had been granted by the city council. Thereupon Mr. Parish transferred these, as well as the concessions of which he had become possessed in Dresden, upon payment of a price which secured him a handsome profit, to the Tramways Company of Germany (limited), which had been formed in England.

The shares of this company, whose most important lines are in Dresden, have in recent years fallen largely into the hands of Germans. At the expiration of the concession the real (immovable) property of the Tramways Company of Germany (limited) will pass, without payment, into the possession of the city.

The six omnibus lines are owned by private persons or companies, but are subject to direct police control. Throughout Prussia the police department is a state, not a municipal institution.

(3) The following is the schedule of rates of fare for droschkes:

Table showing rates of fare for droschkes.

Trips.	Fare.	
	1 or 2 persons.	3 or 4 persons.
Single trips.	*Marks.*	*Marks.*
In the central part of the city, inclusive of the trip to the Central Depot	0.60	0.75
From the Central Depot anywhere within the central part of the city	.70	.90
From the Central Depot and central part of the city to Linden, the royal castle, zoölogical garden, Engesohderberg Cemetery, military riding school, municipal hospital Bult, slaughter house, cattle market, and Schützenhaus, and reverse	.95	1.00
From a part of the city outskirts to another part of the same, to Linden, and reverse, so far as the shortest way is through the center of the city	1.00	1.50
To or from List (high road or park), Vahrenwald, Hainholz, Döhren Tower, Kurhaus, Eilenreide, slaughter house, Herrenhausen, Kleefeld, Steuerndieb, Fisherhof Depot	1.50	1.75
To or from Limmer and Brunnen, Döhren	2.00	2.00
To or from Kirchröder Tower:		
By country road	.....	*2.50
By Eilenriede park	.....	*3.50
To or from Kirchrode, Bornum, Badenstedt, Davenstedt:		
By country road	.....	*4.00
By Thiergarten, or Pferdethurm, or by Eilenriede	.....	*4.50
To or from Bemerode, Bothfeld, Great and Small Bucholz, lake	.....	*5.00
To or from Wülfel, Ricklingen, Stöcken and Leinhausen	.....	*3.00
Time trips.		
One-fourth of an hour	.60	.90
Half an hour	.90	1.20
Three-fourths of an hour	1.20	1.50
1 hour	1.50	2.00
During the races.		
To or from the races	2.00	†3.00

* For 1 to 4 persons. † For 3 to 5 persons.

If the droschke is ordered to come to the house door, there is due, in addition to the regular charge, 10 pfennigs; if the passenger keeps the droschke waiting more than ten minutes, for every additional and fractional ten minutes 20 pfennigs extra must be paid.

The maximum street-car rates of fare were fixed by agreement between the company and the municipal authorities; but recently, owing to the growing competition of the omnibus lines, the street-car company was obliged to somewhat modify its rates. Each line is divided into sections, and persons not holding season tickets pay according to the distance traveled, *i. e.*, the rate between certain important points is fixed, and a person can go the whole way or only a fraction of the way for the fixed amount. The difference in systems is this: In America we pay a certain amount and ride as far as we please, while here, the line being divided into sections, the system is more like that which obtains on railways.

The following is the schedule of street-car rates of fare:

Trip.	Fare.	Trip.	Fare.
	Pfennigs.		*Pfennigs.*
Döhren Tower to Herrenhausen	25	Königsworther Platz to Linden (Göttinger street)	15
Döhren Tower to Aegidien Platz	10	Königsworther Platz to Linden (Falken street)	10
Böhmer street to Steinthor	10	Aegidienthor Platz to Bahrenwald	10
Aegidienthor Platz to Königsworther Platz	10	Bahnhof street to Hainholz	10
Königsworther Platz to Herrenhausen	10	Bahnhof street to Sand street	5
Döhren Tower to Steinthor	15	Aegidienthor Platz to Zoölogical Garden	10
Steinthor to Herrenhausen	15	List to Zoölogical Garden	20
Aegidienthor Platz to Pferdethurm	10	List to Steinthor	10
Bischofsholerdamm to Steinthor	10	Steinthor to Zoölogical Garden	10
Aegidienthor Platz to Linden (Falken street)	10	Steinthor to Wülfel	20
Aegidienthor Platz to Linden (Göttinger street)	15	Döhren Tower to Wülfel	10
Steinthor to Linden (Göttinger street)	10		

Season tickets are issued irrespective of distance, but limited by time. The following are the rates charged:

Time.	Good on any street-car line.		Good on one street-car line only.	
	Total.	Daily average.	Total.	Daily average.
	Marks.	*Pfennigs.*	*Marks.*	*Pfennigs.*
1 year	100	27.4	60	16.4
6 months	55	30.1	35	19.2
3 months	30	32.8	20	21.9

Monthly tickets can be obtained at any time, but must expire at the close of a month. If the holder is absent from the city at least four weeks, the time can be extended.

The omnibus rate of fare is 10 pfennigs, irrespective of distance. On one omnibus line the rate of fare is only 5 pfennigs.

(4) The street-car company pays nothing to the city except the usual taxes. The municipal income tax of Hanover is fixed at 150 per cent of the Prussian state income tax, which is as follows:

Table showing Prussian state income-tax schedule, as fixed in the law of May 25, 1873, section 20.

Annual incomes.	Tax.	
	Annual.	Monthly
	Marks.	*Marks.*
More than 3,000 marks up to 3,600 marks	90	7.50
3,600 to 4,200 marks	108	9.00
4,200 to 4,800 marks	126	10.50
4,800 to 5,400 marks	144	12.00
5,400 to 6,000 marks	162	13.50
6,000 to 7,200 marks	180	15.00
7,200 to 8,400 marks	216	18.00
8,400 to 9,600 marks	252	21.00
9,600 to 10,800 marks	288	24.00
10,800 to 12,000 marks	324	27.00
12,000 to 14,400 marks	360	30.00
14,400 to 16,800 marks	432	36.00
16,800 to 19,200 marks	504	42.00
19,200 to 21,600 marks	576	48.00
21,600 to 25,200 marks	648	54.00
25,200 to 28,800 marks	756	63.00
28,800 to 32,400 marks	864	72.00
32,400 to 36,000 marks	972	81.00
36,000 to 42,000 marks	1,080	90.00
42,000 to 48,000 marks	1,260	105.00
48,000 to 54,000 marks	1,440	120.00
54,000 to 60,000 marks	1,620	135.00
60,000 to 72,000 marks	1,800	150.00
72,000 to 84,000 marks	2,160	180.00
84,000 to 96,000 marks	2,520	210.00
96,000 to 108,000 marks	2,880	240.00
108,000 to 120,000 marks	3,240	270.00
120,000 to 144,000 marks	3,600	300.00
144,000 to 168,000 marks	4,320	360.00
168,000 to 204,000 marks	5,040	420.00
204,000 to 240,000 marks	6,120	510.00
240,000 to 300,000 marks	7,200	600.00
300,000 to 360,000 marks	9,000	750.00
360,000 to 420,000 marks	10,800	900.00
420,000 to 480,000 marks	12,600	1,050.00
480,000 to 540,000 marks	14,400	1,200.00
540,000 to 600,000 marks	16,200	1,350.00
600,000 to 660,000 marks	18,000	1,500.00
660,000 to 720,000 marks	19,800	1,650.00
720,000 to 780,000 marks	21,600	1,800.00

The tax for each additional 60,000 marks of income is 1,800 marks.

In addition to its taxes the street-car company is under further obligation to the city to keep in good order the paving between and for a space of 2 feet outside of its rails. Furthermore, many municipal officials, especially those connected with the building commission, receive from the company free passes.

At the expiration of the period of concession the city may purchase, if it choose, at a moderate assessed valuation, the property of the Continental Horse-Car Stock Company. As already stated, at the expiration of its contract with the municipal authorities the property of the Tramways Company

of Germany (limited), with the exception of horses and rolling stock, will pass to the possession of the city.

The omnibus companies and droschkes pay nothing to the city except in the way of taxes.

(5) As already stated, the maximum rates of fare for the street-car lines were fixed by an agreement between the company and the municipal authorities. The magistracy exerts no direct influence on the omnibus rates of fare. As the omnibuses are exceedingly shabby and are drawn by horses most of which are in a pitiable condition, self-interest compels the owners to keep their rates of fare lower than those of the street-car company. The rates of fare for droschkes are strictly controlled by the Prussian police authorities in Hanover.

The number of passengers in street cars and omnibuses is limited by law, and in each car or omnibus is a conspicuous notice stating how many passengers can be accommodated with seats and how many standing places there are on the platforms. The right of each passenger to a comfortable place is carefully protected. No passengers are allowed to stand inside the omnibus or car, and hence the street-car company, for its own gain, can not place anyone in a position where, for reasons of politeness, he is required to surrender the seat for which he has paid.

After every halt, before starting again the driver is required to blow on a whistle, and also when, during the trip, he sees on or near the track before him any obstacle, such as a wagon or pedestrian. The conductor is required to remain on the rear platform as much as possible, and he is responsible if he permits the presence of more passengers in the car or on the platforms than the law allows.

Smoking is not permitted except on the platforms. Each person, when he pays his fare, receives a ticket showing how far he is entitled to ride. This ticket he is required to keep until he leaves the car to avoid the possibility of being compelled to pay twice and also to show on demand to an inspector, who may enter the car at any time.

Regular stopping places are marked by iron sign posts, and in several places there are waiting rooms. Between these stopping places, which are usually only a few hundred yards apart, conductors are not required to stop the cars for anyone to get on or off.

(6) The facilities afforded are generally satisfactory, though, as has already been said, the omnibuses are small and so roughly equipped that they are patronized almost exclusively by the working classes. Moreover, there are many parts of the city which can be conveniently reached only by means of droschkes.

The annual dividends of the Tramways Company of Germany (limited) have, in recent years, amounted to 6 per cent. This, however, has been rendered possible by the large profits is Dresden, the profits in Hanover justifying a dividend of not more than 2 per cent.* The total receipts of

* For much of the statistical information given in this report I am indebted to the courtesy of Mr. M. Simon, banker of the Tramways Company of Germany (limited).

the company in the year 1890 (Dresden and Hanover) were £140,770 11*s.* 9*d.* The total expenses in the same period were £100,225 3*s.* 5*d.*, of which £7,061 13*s.* were paid as rent money to the Continental Horse-Car Company. The stock capital of the company was £431,820.

The six omnibus lines belong to four companies, one of which is said to pay fairly well. They are all, however, new enterprises, and hence it is impossible to state their financial condition accurately.

As no two droschkes belong to the same person, it is not possible to give any information in regard to the profits of this business. On account of their low rates of fare, however, they do a brisk business, especially on Sundays and holidays.

The Tramways Company of Germany (limited) uses in Hanover eighty-nine street cars and three hundred and eight horses. Furthermore, it has in its employ two hundred and thirty-eight persons, of whom sixty-six are drivers and sixty-five conductors. On Sundays and holidays stable boys and other employés of the company are used as drivers and conductors. As already stated, the length of the Hanover street-car lines is 14.46 English miles, nearly all of which is single track.

GEO. H. MURPHY,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Hanover, July 6, 1891.

MAYENCE DISTRICT.

REPORT BY COMMERCIAL AGENT SMITH.

(1) The cities of this consular district of any size are Mayence, with a population of 73,000; Darmstadt, with a population of 50,000; and Wiesbaden, with a population of 64,000. Mayence is provided with horse cars passing through a number of its streets and will soon have a steam street railway extending to suburban places. Darmstadt has a street railway propelled by steam, but no horse cars; this railway, passing through the city by the shortest way, connects it with suburban places. Wiesbaden has a line of horse cars running through the city, and also a steam tram which runs from Biebrich, on the Rhine, a place about 3 miles distant, through prominent thoroughfares of Wiesbaden to a small place of resort about ten minutes' ride outside the city at the other end.

(2) The horse-car and steam tram lines at Mayence, Darmstadt, and Wiesbaden have all been laid and are managed by the same people, namely, a bank at Darmstadt and a firm at Berlin in association. In respect to Mayence, detailed information has been received by me, but that furnished by Darmstadt and Wiesbaden is meager.

(3) At Mayence the maximum fare fixed for the horse cars in the concession granted by the municipality is 10 pfennigs (2.48 cents) for the first kilometer (0.621 mile), 15 pfennigs (3½ cents) for 2 kilometers (1¼ miles),

and 5 pfennigs (1.2 cents) for every additional kilometer; but in no case is more than 20 pfennigs (4.76 cents) for one ride, including transfers, to be exacted. These rates can not be increased without the express concurrence of the city, but may be lowered at the will of the company. For extra trips after 10 o'clock at night, however, an additional 5 pfennigs (1.2 cents) may be demanded on the 10 and 15 pfennig fares and 10 pfennigs (2.38 cents) on the 20-pfennig fare (4.76 cents). Children under 3 years of age are carried free if no seat is claimed for them, and for those from 3 to 10 years of age at least 5 pfennigs (1.2 cents) less than the regular fare is paid. School children are entitled to 80 of the 10-pfennig (2.38 cents) tickets for 2 marks (47½ cents). Transfer tickets have to be given in all directions. Passengers are permitted to carry with them free small articles weighing not more than 10 kilograms (22 pounds) when they do not disturb other passengers or take up a seat. Large packages, baskets, or bundles can be put on the platform with the permission of the driver, but must be paid for. At Darmstadt, on the steam tram, the fare is 10 pfennigs (2.38 cents) for the first kilometer and 5 pfennigs (1.2 cents) for each additional kilometer.

(4) In the case of Mayence the railway corporation pays 1½ per cent of its gross receipts on the horse cars to the city, which is to be augmented to 2½ per cent from 1895. The corporation has also the customary state taxes and county and communal exactions to pay. Furthermore, should the net earnings in any year exceed 6 per cent of the capital invested, 15 per cent thereof has also to be turned over to the city, in addition to the percentage of the gross receipts alluded to above. Darmstadt and Wiesbaden do not receive any special return for the franchise granted. Security has to be given for the faithful performance of obligations on the part of the railway. In the case of Mayence it is 30,000 marks ($7,140) in cash, state bonds, or other equally valuable securities, to be held by the city until the franchise expires.

(5) The charges for transportation are fixed by official authority, that is, a limit made that is not to be exceeded without the express concurrence of the city.

(6) The facilities afforded are understood to be generally satisfactory to the people and profitable at Wiesbaden to those engaged in supplying them, but are not very remunerative in Mayence.

In addition to the above, it should be remarked that in the concessions there is a provision that the city shall have the right to purchase the roads after the lapse of a specified time. At Mayence the concession granted is for thirty-five years, and at any time after fifteen years from its date the city will have the right to buy the horse-car line on one year's notice.

There are no omnibus lines in this district worthy of mention.

JAMES H. SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, July 6, 1891.

NUREMBERG.

REPORT BY CONSUL BLACK.

HORSE CARS.

In the year 1881 a royal commission was granted to one Heinrich Alfes, of Bremen, to construct a street-car line, not only in the city of Nuremberg, but also to and through the adjoining city of Fürth. In the following year (1882), the year of Nuremberg's international exhibition, and from which period much of Nuremberg's modern prosperity dates, the line was sold to a company, which owns it at the present time, known by the name of Nürnberg-Fürther Strassenbahn Gesellschaft (Nuremberg-Fürth Street-Railroad Company).

The cars of this corporation traverse a distance of about 12½ miles, most of which is double tracked, the entire length of laid tracks being about 23 miles.

The maximum charge allowed for 2,000 meters (the equivalent of about five-eighths of a mile) is 10 pfennigs (2⅜ cents); the company, however, can reduce this to whatever amount they see fit in order to meet competition, and they run one distance of 10,534.4 meters (6½ miles) for the small sum of 20 pfennigs (4¾ cents).

There is no direct taxation of the company by the municipality, but it is compelled under its charter not only to maintain, but to clean all the streets through which its cars run to the extent of 3 meters (9.85 feet) in width where the track is single and 4½ meters (14.76 feet) in width where the tracks are double. This measurement is made from the middle of the single track 1½ meters (4.83 feet) on either side and from the middle between the two double tracks 2¼ meters (7.38 feet) on either side.

The cost per year since 1883 for maintaining and cleaning streets was as follows:

Year.	Maintaining.	Cleaning.
	Marks.	*Marks.*
1883	.....	*9,574
1884	10,689	5,734
1885	20,150	8,867
1886	21,789	7,582
1887	16,254	7,485
1888	13,059	8,944
1889	11,500	10,240
1890	13,151	9,908

*Maintaining and cleaning.

To the royal Government they pay an income tax, which last year amounted to the sum of 5,083.96 marks.

The lines in Bavaria are governed by the railroad laws of the State, and not, as in most other countries, by the ordinances of the municipality; so

that, if they desire in any way to change the status of their line—such as doubling their tracks, putting in sidings, etc.—they must obtain permission from the proper minister of the royal Government to enable them to do the same, and it is also essential, in order to make the actions of shareholders in meeting assembled legal, that some one delegated by the royal Government shall be present.

This corporation is a well-managed one and gives general satisfaction to the public; it grows in prosperity from year to year, as the dividends will show, and demonstrates from time to time commendable energy in increasing the efficiency of its line in order that the public may be better served. The dividends were 1½, 2, 3, 4, and 5 per cent for the years 1886–'90, respectively.

The fares are graded—10, 15, and 20 pfennigs—according to distance. Up to 2,000 meters it is 10 pfennigs, 2,000 to 4,000 meters it is 15 pfennigs, and upwards of 4,000 meters 20 pfennigs. The conductors are supplied with tickets of these various denominations and of different colors, one color being used for the outward trip and another for the return. They are in packages of five hundred each, and a passenger, upon paying his fare, is given one representing the amount paid. They are all numbered and are used as a part of a very good system for control. They are distributed to the conductors every morning, together with a slip containing the ticket numbers. This slip is used for two purposes: First, it is the account sheet on which the conductor makes his reckoning, and which must be written up at the final stoppings both going and returning, and not only the number of tickets sold and the amount of money received for the same, but the time of arrival at the points of destination must be entered. In the evening the footings are made by the conductor, which are in turn checked by a clerk, and the final settlement is then effected; if a shortage occurs it is charged to the conductor. Secondly, it is also for the use of the controller, of whom the line has five, whose duty it is from time to time to inspect the tickets issued to passengers, seeing if their numbers correspond with those upon the slip, and upon which he also enters his name and the hour at which the inspection was made.

The daily wages of conductors and drivers are as follows: First three months, 2.50 marks; three to six months, 2.75 marks; six months to four years, 2.90 marks; after a service of four years, 3 marks. Those who have been in the employ of the company five years receive a daily allowance of 3.10 marks, which is increased each year by 10 pfennigs until the sum reaches 3.50 marks per diem. Employés of ten years' standing receive a present on Christmas. Conductors' compensations are also augmented somewhat by the tips of passengers.

Tickets good for from one to six months are also issued, and the charges for the same are 10, 20, 28, and 54 marks for one, two, three, and six months, respectively. They enable the holder to use the cars at any time and for any distance, both in this city and in Fürth. Those issued to

school children cost 4 marks per month. The annexed table shows the number of tickets sold and the amounts received for the same in the year 1890:

Table showing number of tickets sold and amounts received for same in the year 1890.

Month.	Tickets at 10 pfennigs.		Tickets at 15 pfennigs.	
	Number.	Amount.	Number.	Amount.
		Marks.		*Marks.*
January	191,623	19,162.30	26,554	3,983.10
February	164,084	16,408.40	23,933	3,589.95
March	196,343	19,634.30	31,783	4,767.45
April	220,887	22,088.70	38,765	5,814.75
May	278,021	27,802.10	56,320	8,448.00
June	265,638	26,563.80	53,270	7,990.50
July	293,958	29,395.80	57,489	8,623.35
August	388,258	38,825.80	72,080	10,812.00
September	314,503	31,450.30	58,130	8,719.50
October	251,196	25,119.60	48,344	7,251.60
November	222,041	22,204.10	35,617	5,342.55
December	204,788	20,478.80	30,634	4,595.10
Total	2,991,340	299,134.00	532,919	79,937.85

Month.	Tickets at 20 pfennigs.		Total.	
	Number.	Amount.	Tickets.	Amount.
		Marks.		*Marks.*
January	13,667	2,733.40	231,844	25,878.80
February	13,287	2,657.40	201,304	22,655.75
March	17,432	3,486.40	245,558	27,888.15
April	22,669	4,533.80	282,321	32,437.25
May	35,058	7,011.60	369,399	43,261.70
June	25,832	5,166.40	344,740	39,720.70
July	32,147	6,429.40	383,594	44,448.55
August	59,197	13,839.40	519,535	61,477.20
September	38,885	7,777.00	411,518	47,946.80
October	30,371	6,074.20	329,911	38,445.40
November	13,418	2,683.60	271,076	30,230.25
December	16,301	3,260.20	251,723	28,334.10
Total	318,264	65,652.80	3,842,523	442,724.65

The cars are run on the average at intervals of five minutes between the hours of 7 a. m. and 9 p. m.

The company owns at the present time one hundred and seventy-eight horses and seventy-six cars, viz: Thirty-six one-horse cars capable of holding twenty-four persons, twelve sitting and twelve standing; six two-horse cars capable of holding thirty-four persons, twenty-two sitting and twelve standing; two two-horse cars capable of holding forty-two persons, twenty-two sitting and twenty standing; four open two-horse cars capable of holding forty persons, twenty-eight sitting and twelve standing; eighteen open one-horse cars capable of holding thirty-two persons, twenty sitting and

twelve standing; ten open one-horse cars capable of holding thirty-six persons, twenty-four sitting and twelve standing.

Every car has its own conductor and driver, and an extra horse is used for the one-horse cars in the hilly portion of the city.

During the year 1890 118,460.12 marks were expended for forage.

RAPID TRANSIT.

Nuremberg and Fürth are also connected by a rapid-transit line, which covers a distance, from station to station, of 3¾ miles. Its construction was originally suggested in the year 1826 by King Ludwig, of Bavaria, and it has the further distinction of being the first railroad ever constructed in Germany.

In the year 1833 Johannes Scharrer, a Nuremberg merchant, became the active promoter of the enterprise. He obtained the royal charter under which the stock company was formed, and expended much of his time and labor to bring about the construction of the road, which was successfully accomplished in the year 1835. The good Germans, anxious to patronize home industry, were determined, if possible, to have the rails for this road made within the limits of the Fatherland. Having secured a sample of the English pattern made of rolled iron edged, they set about finding a firm which could fill their order. The task proved very arduous, but at last one was discovered upon the banks of the Rhine which was willing to engage in the attempt to perform what at that time was a novel and difficult job, and which was finally brought to a most satisfactory conclusion. The engine, however, had to be brought from England, and it was supplied by Stephenson at a cost of about $5,700. It was used very sparingly at first, for, although the trains were run from 7 a. m. to 6 p. m., it was only brought out for a little exercise between the hours of 1 and 2:30 o'clock in the afternoon. During the other parts of the day horses were used; in fact, they were not entirely dispensed with as an adjunctive means of locomotion until the year 1862.

The total cost of building and equipping this road was about $71,000. It is under the direct supervision of the royal Government, and twice every year a committee is appointed by the authorities to make a thorough inspection of the property, such as tracks, buildings, engines, cars, etc., and if, in their opinion, any alterations or additions are deemed necessary the same are suggested and submitted to the proper minister for his approval.

The total taxes paid to the two municipalities for the last year amounted to about 4,000 marks, the greater part of which was paid to the city of Nuremberg.

The accommodations requisite to supply the traffic in 1833, when the two cities contained but a total population of 54,000, would be quite inadequate at the present time, the total population being 185,000, of whom 142,500 are to the credit of the city of Nuremberg.

The directors, who, under the charter—a very liberal one—arrange at their own discretion the matter of transportation charges, anticipated the public demand and made considerable reductions in the original tariff rates in the year 1882. About that time they also introduced return tickets; and the train service, which theretofore had been but hourly, they increased to half-hourly runnings between the hours of 11 a. m. and 8 p. m. for week days and on Sundays every half hour from 7 a. m. to 11 p. m.

According to the annual report for 1890, the rolling stock of the company consisted of five engines, forty passenger cars, and ten freight cars. It employs two conductors, five assistant conductors, five engineers, and five firemen. The wages paid these are as follows:

	Marks.
Conductors	1,500 to 1,896
Assistant conductors	900 to 1,644
Engineers	1,236 to 2,352
Firemen	900 to 1,260

The cars of the company are divided into first, second, and third class. The fares charged are:

Description.	Fare.	Round trip.
	Pfennigs.	*Pfennigs.*
First class	40	70
Second class	30	50
Third class	20	30

Season tickets are issued at a cost per month of 10.80 marks for second class and 7.20 marks for third class. Those for school children and apprentices are in books of sixty tickets and are charged for at the rate of 9 marks for second class and 6 marks for third class.

The following statement of dividends indicates the great prosperity which has attended this corporation:

	Per cent.
1835 to 1868	12 to 19
1868 to 1876	20
1876 to 1890	21

One mark of 100 pfennigs is equal to 23.8 cents, and 1 meter is equal to 39.37 inches.

WM. J. BLACK,
Consul.

UNITED STATES CONSULATE,
Nuremberg, June 18, 1891.

ITALY.

FLORENCE.

REPORT BY CONSUL LONG.

(1) The various systems of passenger transportation in and about the city of Florence comprise the following: Electric cars, connecting the city with the ancient Etruscan town of Fiesole; tramway cars to Signa, Prato, Poggio-Cajano, and San Casciano; tram cars coursing around the city, and direct to Settignano, Bandino, and Sesto; horse cars—not running on rails—to some forty-two different points in the city environs; and omnibuses traversing the important avenues and streets in eleven different directions within the municipal limits as far as the city gates.

(2) The electric line to Fiesole and the steam tramway to San Casciano are owned by a Florentine company and managed by the banking firm of Fenzi & Co. The steam cars to Signa, Prato, and Poggio-Cajano, in connection with the tram line to Settignano, Bandino, and Sesto, are owned by a Belgian company and operated under the direction of the Belgian consul at Florence. The horse cars to the Florence dependencies are owned by individual capital, and the city omnibus line by a private corporation. There is no organization or system of passenger transportation owned or controlled by the municipality.

(3) A list herewith appended will show the rates of fare charged, as compared with distances.

Table showing transportation fares in the city of Florence.

Description.	Owners.	Direction.	Distance.	Fare.
Urban:			*Miles.*	
Electric	Fenzi & Co.	Fiesole	4½	$0.14
Steam	do.	Viale de Colli	2	.08
	Belgian company	Cascine	1¼	.05
Tram (horse)	do.	do.	1½	.04
		Alleys	1½	.05
	Fenzi & Co.	Porta Groce	1	.03
Omnibus	Private corporation	The various city gates	1	.02
	Fenzi & Co.	San Casciano	12	.27
Suburban:				
Steam	Belgian company	Poggio-Cajano	8	.10
		Prato	10	.16
		Signa	8	.10
Tram (horse)	do.	Ripoli	2½	.05
		Sesto	4	.08
		Settignano	3	.06
Horse (diligence)	Individual	42 different places		*.02

* Per mile.

(4) The municipality or corporation of Florence is privileged to take possession upon the termination of a period of seventy-five years from the date of organization of all tramway tracks, such as rails, stations, depots, work-

shops, and motive power, without any indemnity. Other property, such as cars, horses, furniture, tools, etc., to revert to the company.

(5) The tramways are liable or subject to all the customary taxes imposed upon such organizations, excepting the communal carriage tax.

(6) All passenger transportation service in Florence is popular with and satisfactory to the public, and pays a gratifying return upon the capital invested.

JAMES VERNER LONG,

UNITED STATES CONSULATE, *Consul.*

Florence, June 26, 1891.

NAPLES.

REPORT BY CONSUL TWELLS.

1. MODES OF CONVEYANCE.

Naples is amply provided with public conveyances, viz, omnibuses, horse cars, tram cars, two steam tram roads, and two funicular roads connecting the population on the heights above the town with the city itself.

Several thousand one-horse cabs, together with numerous four-seated, two-horse carriages, ply to all parts of Naples and to the neighboring villages.

There are as yet no electric or cable roads established, but a charter for an electric road has recently been granted.

2. OWNERSHIP.

The tram, omnibus, and steam roads are owned by corporations or societies, but many of the carriages and cabs are the property of individuals, who are obliged to take out a license and pay a tax to the municipality for the privilege of running them.

3. FARES.

The rates of fare are fixed by the municipal authorities, and can not be exceeded under penalty of fine and punishment, if reported at police headquarters.

The legal fare for a one-horse cab per course within the city limits is 14 cents in American money, but if hired by the hour it is 30 cents for the first hour and 22 cents for subsequent hours. The two-horse carriages are permitted by law to charge 28 cents for one course, but if retained for a longer time the legal fare is 48 cents for the first hour and 40 cents for every hour after. A bargain, however, can often be made at even lower prices than these, which, if well understood when the engagement is made, will be undisputed when the cab is dismissed, a small *buona mano* only being expected. Omnibuses charge but one rate of fare, and have no distinction of class. The rate of fare is 3 cents over the whole route and 2 cents for half the distance, while the steam cars and street trams, on the other hand, are divided into compartments of first and second class. The distance between the termini of these roads is divided into six or seven stations, and the rate

of fare allowed by law is 1 cent each for the first six stations, and nothing for the last one.

The stations are about equally distant from each other. A ticket is always good for at least two stations.

According to statistics of which I have been advised, 20,000 lire ($4,000) is paid out daily in Naples for cab hire alone.

4. MUNICIPAL INCOME.

The municipality of Naples does not own any of the corporations controlling transportation within its boundaries, but receives a large return for the franchise which it grants them. The transportation companies in this city are mostly in the hands of foreign capitalists, to whom concessions have been conferred for a number of years, when, at the expiration of the time specified, they are to become the property of the municipality.

The tram company pays into the city treasury annually nearly 400,000 lire (about $80,000). In addition, they are compelled to pay an annual tax on 100 trams and 525 horses, aggregating something like 407,950 lire ($81,590).

The omnibus companies have profited during the past fifteen years to the amount of 1,000,000 lire, and they have paid no royalty on their income during that time; they have, however, tendered in payment for their privilege 10 per cent on their earnings to the city, which has been declined, the municipality demanding 15 per cent, and in consequence a suit at law is now pending to determine the matter.

5. FIXING THE CHARGES.

The charges made for transportion are in a measure determined by the local authorities, who compel the companies to perform certain services which otherwise they would not undertake except under compulsion, *i. e.*, they are obliged to carry some classes of municipal employés, such as city guards, telegraph messengers, police, and postmen—one on the platform of each car or tram—without charge.

The tram company is required to employ not less than 100 cars during the winter and 150 in the summer months for the accommodation of the public. The maximum number may be exceeded at the convenience of the company, but to run less than the minimum is prohibited by law.

6. FACILITIES FOR TRANSPORTATION.

The facilities for transportation afforded are satisfactory to the people of Naples and the adjacent towns which they connect, and they are moderately profitable to those engaged in the business of supplying them.

The tram company, owned by Belgian capitalists, earns about 3 per cent on the money invested, and is considered a good investment.

JNO. STEEL TWELLS,

UNITED STATES CONSULATE, *Consul.*

Naples, November 18, 1891.

PORTUGAL.

LISBON.

REPORT BY CONSUL-GENERAL BATCHELLER.

(1) All the systems of transportation referred to in interrogatory 1 are employed in Lisbon and its vicinity.

(2) Many individual owners run cars over the rails laid and maintained by the Companhia Carris de Ferro de Lisbon. The cars used by this company are mostly manufactured by John Stephenson & Co., of New York.

(3) Rates of fare vary, according to distance, from 20 reis to 80 reis (2 to 8 cents).

(4) The Companhia Carris de Ferro de Lisbon pays the municipality largely for its franchise, but that franchise implies no monopoly, because pirate cars and cars of another company make use of the rails without molestation, except to turn out upon the pavement when they meet the regular cars. In addition to the sum paid by the company, they are forced to perform certain paving; and, further, they transport at a merely nominal rate the employés in the Government ministries.

(5) The cars perform or cease the service on the various routes at their pleasure, nor does the municipality indicate routes which must be operated; but it regulates or supervises, in accord with the company, the time-tables and rates of fare.

(6) The public is satisfied to a certain extent with the company, and the stockholders are satisfied with the profits divided.

GEORGE S. BATCHELLER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Lisbon, July 23, 1891.

RUSSIA.

MOSCOW.

REPORT BY VICE-CONSUL WERTHEIM.

(1) The systems of public conveyances employed in Moscow for urban transportation are a number of tram cars and about thirteen thousand one-horse vehicles of a construction quite peculiar to this country. The latter are on four wheels and made to accommodate a driver and two passengers, and resemble somewhat a miniature victoria. Most of them are provided with a hood and apron for protection against rain.

During the winter, as soon as there are snow roads, the vehicles just described are replaced by sleighs, affording the same accommodation, but the number of them is about eighteen thousand, as many of the villagers within the district, deprived of all agricultural labor during the winter months, come to Moscow with sleighs and horses and ply them for a time, the result being a reduction of the fares, compared with those charged during the summer season, of 20 to 25 per cent.

There are some omnibus cars of a low class and of very primitive construction, resembling somewhat an Irish jaunting car. They carry eight to ten passengers; but this class of vehicle is disappearing as fast as the tramways are extending.

A few steam cars have lately come into use, but exclusively for suburban transportation, and their use is being rapidly extended to many of the suburbs the Moscow residents are in the habit of resorting to during the summer season.

(2) The tramway cars are owned by two public share companies, and are both prosperous, having paid good dividends for several years. The other vehicles are owned by individuals, and these carry on their trade with varied success; but, upon the whole, the business is by no means generally lucrative.

(3) The rates of fare charged by the two tramway companies are as follows: By the first company, about 3 cents for inside and outside accommodation per ride from station to station, the distance varying, according to the district of the town, from 2 to 3 miles. The second company has no outside accommodation, and the fare is about 3 cents per ride, irrespective of distance.

The omnibus cars charge about the same. The one-horse vehicles plying for hire have no tariff. They adapt their demands in accordance with the circumstances of the moment, such as the state of the weather, the supply of fares, etc. A great deal of haggling frequently occurs before a bargain is concluded. The fares are very moderate, being, according to the quality of the turnout, 25 to 40 cents by the hour or from 7 to 10 cents per mile; the rate is for the vehicle which seats two passengers.

No system of control is in use except on the tramways, where the conductor detaches a ticket for every passenger out of a book, and a number of inspectors examine the tickets issued and check the conductor at frequent intervals.

(4) The municipality levies a tax of about $3 per annum per driver, but derives no other benefit or return. The tramway companies are subject to the same taxes as any other trading company, and have to keep the roads their lines traverse in good repair.

(5) The charges made for transportation are in no way determined by the local authorities; but, in the event of a dispute, the police would at once determine what should be the charge.

(6) The facilities afforded leave much to be desired. There is a great want of cleanliness generally, and the vehicles are mostly very poor and in

a dilapidated condition, which shows that the profit yielded will not bear much expenditure on the turn-out. Moreover, horses and their maintenance being cheap, a great number of private carriages are in use, as well as those hired by the month. A very respectable one-horse conveyance can be had at from $40 to $50, and a carriage and pair at from $60 to $100 per month.

NICHOLAS WERTHEIM,
Vice-Consul.

UNITED STATES CONSULATE,
Moscow, June 1–13, 1891.

ST. PETERSBURG.

REPORT BY CONSUL-GENERAL CRAWFORD.

The means of conveyance mostly employed in this city are the tram cars and the one-horse vehicles called droskies.

The tram cars run in all directions in the city and suburbs. There are two companies. The first, owned almost entirely by the Swiss consul at St. Petersburg, runs four different lines; three of these are run by horses and the fourth by steam. The Swiss consul was the first person who introduced the tramway in this city. He obtained permission to lay lines in the principal streets of St. Petersburg, and both proprietors and the public are satisfied with the large profits on the one hand and with the accommodations furnished by the company on the other. The tram cars are of two stories, a winding stair at each end leading to the top. The fares are 5 copecks (2½ cents) in the interior of the car and 3 copecks (1½ cents) on the outside. The cars are made to accommodate twenty-one inside and twenty outside passengers.

The second company which built tramways in this city is known by the name of the First Tramway Shareholding Company. This company owns and operates twenty-six separate lines. The contract, made in 1874, obliges it to turn over the entire business to the city at the expiration of forty years. Meanwhile it pays the town as follows: Two and one-half per cent of the gross income during the first ten years, this amount not to be less than $6,000 per annum; 3 per cent of the gross income for the second period of ten years, this amount not to be less than $9,000 per annum; 4 per cent of the gross income for the third period of ten years, this sum not to be less than $12,000 per annum; and, lastly, 5 per cent of the gross income during the fourth period of ten years, this sum not to be less than $15,000 per annum.

This company has much longer distances to run, and the fares are 3 cents for inside seats and 2 cents for outside seats. It runs one line in the suburbs by steam, using dummy trains. The company earns large profits, and the public, although it complains that the company does not afford good accommodations, enjoys large benefits from these trams.

The drosky is a means of transportation much in vogue here with the middle classes. It is a small, four-wheeled vehicle made to contain two pas-

sengers and the driver. In summer there are about ten thousand of these vehicles in the city, and in the winter about twenty thousand. The drivers of these droskies are not curbed in their charges by a regulation tariff. The passenger always bargains in advance with the driver. Each drosky bears a conspicuous number, which coincides with the number of the license. The licenses are taken out twice a year, namely, from May 1 to November 15 for the wheeled vehicles or droskies, and from November 15 to May 15 for the sledges. The license costs $1.25 for every drosky or sledge drawn by one horse and $2.50 for carriages or sledges drawn by two horses. The troika, or three-horse sledge, pays a little more. These sledges are owned by peasants, who, having no work to occupy themselves with during the winter months, come to St. Petersburg with their sledges and horses, and, having paid the license, are allowed to engage in this lucrative work. Droskies are not owned or controlled by any company, nearly all being owned by private individuals of the lower class, some owning as many as ten droskies and twenty horses, but generally these poor people own but one drosky or sledge and two horses. Those who own more than one vehicle rent them to their drivers, called "isvostchicks," who work twelve hours a day and must bring in $1.25 on ordinary days and as much as $2 on Sundays and holidays. If they have not earned this much they have to make it good out of their own pockets, and what they earn above these rates they keep for themselves. They are usually clothed, lodged, and fed by the owner of the carriages, who pay the men a salary of about $4 per month. The lowest bargain one can make with one of the isvostchicks is 5 cents, which will cover a distance of about a quarter of a mile, whereas for 10 cents one can easily find isvostchicks to take him a mile or more. They can be hired at the rate of 25 cents per hour. Nearly all ranks of people ride in these droskies. They have no cover.

There are many stands in this city where one can get a closed carriage with two horses. These cost from $1 to $1.50 for three or four hours' driving. When one considers the cost of the outfit and the cost of keeping the horses, he discovers that these poor people earn a good living in this way.

The total cost of an outfit is as follows: Drosky, 75 rubles; horse, 50 rubles; driver's clothes and sundries, 10 rubles; total, 135 rubles.

The earnings per week are as follows: Six days at 2.50 rubles per day, 13 rubles; Sunday, 4 rubles; total, 17 rubles; or 68 rubles per month. The cost of keeping per month is as follows: Driver's wages, 8 rubles; driver's keeping, 4 rubles; rent of stable and keeping of horse, 25 rubles; total, 37 rubles; making a net profit of 31 rubles per month, or 360 rubles per annum.

In this city they have become a necessary institution, as distances are very great. They are to be had in every part of the town, however unfrequented.

J. M. CRAWFORD,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, June 25, 1891.

SPAIN.

BARCELONA.

REPORT BY CONSUL BOWEN.

The 275,000 inhabitants of Barcelona and the 500,000 inhabitants of Barcelona and suburbs are well provided with omnibuses, horse cars, tram cars, and steam trams. Electric cars have not yet been introduced into this part of Spain. All of the companies are Spanish, except one, the Anonima de Tranvias de Barcelona, which is English. These companies are principally corporations. Only two or three lines are owned by individuals, who have but little capital and but very few cars or omnibuses. For instance, La Catalana has but fourteen cars, and another company, just started, has but eight cars. The municipality does not own any of the local transportation systems. The rates of fare are equal to 2, 3, and 4 cents (American) within the city, and do not exceed 10 cents to the most distant suburb for first-class passengers.

When concessions are applied for by a new company it has to state its rates of fare, and that rate is considered the maximum. Lower rates may be charged thereafter if the company sees fit. In return for their franchise the tram companies pay a meter tax according to the length of their road; while the omnibuses pay a tax on their vehicles and animals. The meter tax is about 20 cents per meter.

The only compulsory service required of the companies by the municipality is that they must run every day in the year.

The facilities afforded by these systems are satisfactory to the people and profitable to the companies. The English company has always paid 5 per cent and upwards. The omnibuses make quicker time, because they go either on the tracks or off, and they are more popular with the people.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, May 27, 1891.

CADIZ.

REPORT BY CONSUL TURNER.

Seville is the only city of this district in which street cars are used. This means of transportation has been tried and abandoned in Cadiz and Jeres de la Frontera. In the latter place they failed for lack of patronage, and here the compactness of the population and the narrowness of the streets made them

impracticable. For this reason carriages and omnibuses are the only means of transportation used here. They are owned sometimes by individuals and sometimes by companies, and are subject to municipal control, but are never obliged to perform gratuitious service for any Government authority.

TARIFF OF FEES FOR CARRIAGES AND OMNIBUSES.

One-horse cabs of two or four seats, with two persons, 2 pesetas per hour, and with three or four persons, 2.50 pesetas per hour; for single trips, with one or two persons, 1 peseta, and with three or four persons, 1.50 pesetas. Two-horse carriages of two or four seats, with two persons, 4 pesetas per hour; with three or four persons, 4 pesetas per hour; for single trip, with not more than four persons, 2 pesetas. Two-horse breaks, omnibuses, etc., holding more than four, with two or more persons, 5 pesetas per hour; to or from any place of amusement or railway station, etc., each person 0.50 peseta.

Livery stables.—First-class two-horse carriages, with four seats, first hour, 6.25 pesetas, and for each additional hour 3.75 pesetas; after 12 o'clock at night, the first hour is 7.50 pesetas. Second-class two-horse carriages, for first hour 3.75 pesetas, and each additional hour 2.50 pesetas; after 12 o'clock at night the first hour is 5 pesetas, and each additional hour is 3.75 pesetas.

Omnibuses are 7.50 pesetas for the first hour and 5 pesetas for each additional hour. At night the rates are 8.75 pesetas and 6.25 pesetas, respectively.

TAX AND LICENSES.

General tax on animals, vehicles, etc.

Animals:	Pesetas.
For each horse used	23.00
For each mule or ass	12.00
Owned by individuals for private use—	
For each horse	15.00
For each mule or ass	6.00
Two or four wheeled carriages for public service for hire by the hour or by the season, for each horse used	28.00
Four-wheeled cabs, carriages, and vehicles, each	20.00

Municipal license per quarter.

Private carriages of all classes	7.50
Carriages of all classes for public service	1.25
Drays and carts	1.00
Handcarts	.50

In addition to the foregoing an ad valorem property tax is paid.

R. W. TURNER,
Consul.

UNITED STATES CONSULATE,
Cadiz, June 11, 1891.

GRAO OF VALENCIA.

REPORT BY CONSULAR AGENT MERTENS.

For both urban and suburban transportation in this city only the horse-car system is employed.

They are owned by corporations, and the rates of fare are fixed at a certain amount per kilometer at the time the concession for the line is granted by the Government. Should there be a competition for the same line the license will be given to the bidder of the lowest fare. This rate of fare once established in the concession the corporation is at liberty to reduce the rates, but never to go beyond the limit named.

The urban horse cars charge 2 cents to any part in the city and also 2 cents for one circuit trip around the city's limits. The suburban horse cars charge at the rate of about 1 cent per kilometer and lower, or per section of the road, according to their convenience, but always inside the limit of the original grant, which, however, is generally fixed rather high for emergencies.

The corporations have to pay a yearly contribution of 5 cents per running meter of their track during the first ten years and 10 cents per meter for the subsequent time of their existence; also 10 per cent of their yearly net profits.

The municipality has a right to examine the track and rolling stock in the interest of public safety, and can compel the companies to increase their facilities if insufficient for the public demand.

A very limited omnibus traffic is sustained from the central parts of the city to the remotely located railway stations, charging 2 cents per head and trip of from ten to fifteen minutes. These conveyances are owned by individuals.

These transports pay a yearly contribution of 58 cents per kilometer and $4.54 per horse.

THEODOR MERTENS,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Grao of Valencia, May 26, 1891.

MALAGA DISTRICT.

REPORT BY CONSUL NEWSON.

(1) *Malaga.*—The modes of conveyance in Malaga, together with the number of vehicles, are as follows: Omnibuses, 11; stage coaches, 15; "reperts" (cars which run on high wheels where there is no track), 4; "diablas" (one-horse, two-wheeled cart, called "she devil"), 60; public carriages, 800 (only 250 of which are taxed); horse tram cars now running, 8, but at

the end of June there will be 30; private carriages, 550; one-horse carts for transportation of merchandise, 600; three-horse wagons (two wheels only) for the same purpose, 32.

Granada.—It is very difficult to get any figures approaching correctness of the transportation facilities at Granada, in this consular district, as there is no agent there, but I can say with positiveness that there are no street cars in that city at present, although a line is contemplated. There are about three hundred public carriages for hire, whose taxable value and fares are nearly the same as those in Malaga. The private carriages are very fine, the whole rig, coach and two horses, costing not much less than $1,000 or $1,200. These are taxed at about the same rate as those in this city.

Odra.—At Odra, in this district, donkey conveyance is the only, and therefore the popular, mode of travel. There are no omnibuses or street cars.

Almeria.—At Almeria, a city of 40,000, an agency in this consular district, an omnibus runs from the center of the city to the port, a distance of 1 mile. The fare is 4 cents. It is owned by a private individual. Here is a good place to introduce some modern American improvements. The donkey at present supplies nearly all wants. There are no street cars here, nor omnibuses, except the one mentioned.

Marbella.—At Marbella, another agency, there are steam cars, owned by a corporation, which run to the iron mines to carry the men and bring away the ore. There are no public cars. A few carriages are owned by private individuals.

(2) All carriages and carts in Malaga are owned by individuals, except the horse tram cars, and they belong to an English company. None are owned by the municipality. It is so in the other places mentioned.

(3) The rates of fare are as follows: Omnibuses and stage coaches, 5 cents per mile; horse tram cars, 2 cents per mile; one-horse carriage for one person, for any distance within the city limits, 20 cents in the daytime and 30 cents at night; from one to four persons, 40 cents per hour in the daytime and 50 cents at night; two-horse carriages, 50 cents per hour in the daytime and 60 cents at night. On fair or national feast days the tariffs are raised.

(4) The annual taxes paid the municipality are as follows: Private carriages, one horse, $40; two horses, $60; carriages for hire, one horse, $12; two horses, $24; diablas, $10.20; carts, $18; wagons, $36.

All charges for transportation are determined by the municipality, except on national holidays.

In addition to the above, the Government of Spain obtains annually $4.80 from carts and $12.90 from wagons, and on private carriages one-half of the amount paid to the municipality, which amounts to about $1,700.

In the aggregate the municipality obtains annually from the carriages for hire, $250 (only part of the whole number being taxed); from private carriages, $3,500; from carts and wagons, $6,000. The tramway company pays a mere nominal sum, in view of the fact that they are obliged to keep their roads in repair.

These tramways are built differently from ours, and are of but recent origin in this city. Cars on large wheels, with no track, drawn by three mules and constanly yelled at by barbaric drivers, was the former mode of conveyance on wheels here. Now the rails of the new tramway are laid in stone and cement, the rails being below the surface instead of above, and the track is very even and permanent, the only difficulty being that the dirt gets into the grooves of the rails and adds expense to the proprietors. The cars are large, well appointed, very comfortable, and the service is excellent. They make only five-minute stops and run at the rate of 6 miles per hour. They are well patronized by all classes, and in this one particular alone the Spaniards of Malaga have made a great stride forward.

One of the lines of the tramway runs along the harbor to a place called the "Caleta," about 2 miles from the center of the city, and here are some beautiful houses, built somewhat on the American style, with elegant gardens and splendid views of "the blue Mediterranean."

(5) The local authorities compel the transportation corporations to perform services which they would not undertake except under compulsion. Terms are fixed by the local authorities, and the companies are at liberty to act.

(6) At present the facilities are quite satisfactory. As the city grows it is the purpose of the tramway company to keep pace with it. Financially the company has no cause for complaint.

T. M. NEWSON,
Consul.

UNITED STATES CONSULATE,
Malaga, June 9, 1891.

SWEDEN.

STOCKHOLM.

REPORT BY VICE-CONSUL GEORGII.

There are no systems of public transportation under the control of the corporations in the cities of this district outside of Stockholm, with the exception, perhaps, in a few of them, of some hackney coaches and cabs, for which a tariff is sanctioned by the municipality.

(1) There is one public company of omnibuses, one of horse tram cars, one of tram cars partly for horses and partly for steam, hackney coaches and cabs, and several public companies running steam launches.

(2) The companies are of limited liability, and shares are held by the public. The hackney coaches and cabs belong to private proprietors.

(3) The omnibuses and tram cars have each a uniform fare of 10 öre, with one or two additions of 5 öre for tram cars for extra branches. The hackney coaches and cabs have a special tariff within town for time or for course and outside of town for distance. Steam launches within town have fixed

fares for each line, say 3, 5, and 8 öre, and those running to outside places charge according to distance.

(4) For the tramway companies and the steam-launch lines within the city permission is granted by the municipality. No payment or any monetary return is paid to the town for franchises, but all public companies and private proprietors have to pay the usual taxes on the estimated amount of their profit.

(5) The charges for the tramway and steam launch companies working within the city are sanctioned by the municipality, which, however, leaves the working of the different lines much to the companies themselves, whose best interest it is to satisfy the public.

(6) I think, as a rule, the investments are profitable. One of the tramway companies (the youngest), which has the working of the south part of the town, is not flourishing at present, but hopes are entertained of an increased traffic.

AXEL GEORGII,
Vice-Consul.

UNITED STATES CONSULATE,
Stockholm, August 26, 1891.

SWITZERLAND.

BERNE.

REPORT BY VICE-CONSUL-GENERAL HINNEN.

There are five tramway societies in Switzerland, namely, at Geneva, Bienne, Vevey, Zurich, and Berne. In a few other towns omnibuses serve for transportation.

The lengths of the above tramways are as follows: Geneva, 12,044 meters; Bienne, 4,672 meters; Vevey, 10,374 meters; Zurich, 8,610 meters; Berne, 2,927 meters.

As motive power Geneva employs horses and steam; Bienne and Zurich, horses; Vevey, electricity; and Berne, compressed air.

These lines are owned by corporations. The rate of fare charged at Berne over the whole line is 20 centimes (4 cents); half the line, 10 centimes (2 cents). Small packages are carried free.

The tram society here, with the agreement of the cantonal and communal council, received from the federal authority the concession for seventy-five years. Two thousand francs as security had to be deposited. No profits or taxes are paid to the municipality. At the end of each year an annual report is furnished to the cantonal and communal council.

The charges made for transportation are determined by the local authorities, and the society is compelled to perform some services under compulsion.

The facilities afforded to the people of Berne are very satisfactory; but not to the suburban residents, as the lines are not yet extended that far. No doubt as soon as these suburban lines are built the enterprise will be profitable to the corporation.

The tram was opened October 2, 1890. The income during the months of October, November, and December, 1890, was 31,706 francs, and the expenditures were 25,291 francs.

I have not mentioned in this report the funicular railways, of which there are a great many in Switzerland, serving for local transportation.

JOHN E. HINNEN,
Vice-Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berne, May 21, 1891.

ZURICH.

REPORT BY CONSUL CATLIN.

The systems of local transportation employed in Zurich for urban and suburban traffic are as follows:

(*a*) A network of horse railways, connecting the center of the city with its various extremities.

(*b*) A funicular railway, worked by hydraulic pressure, connecting the Limmat quay with the polytechnic school on the heights above.

(*c*) A narrow-gauge inclined railway, worked by steam, connecting the city with the summit of the neighboring Uetliberg Mountain.

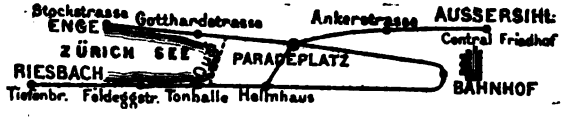
(*d*) The Northeastern Swiss Railway, running accommodation trains to suburban stations.

(*e*) A line of steamers (also operated by the Northeastern Railway) furnishing communication with the lake suburbs.

(*f*) A well-regulated system of cheap cabs.

HORSE RAILWAYS.

The Zurich horse railways are the property of a joint-stock company known as the Zuercher Strassenbahn-Actiengesellschaft, organized in the year 1881, and now operating 8.4 miles of track, as shown in the accompanying diagram:



As the roadway passes through four townships, namely, Zurich, Riesbach, Enge, and Aussersihl, each was represented in the granting of the charter, which was accorded by the cantonal government and confirmed by the federal Government. The stock company is, however, the absolute owner of

the roads and of all the equipment and material pertaining thereto. The rates of fare charged are extremely cheap, namely, an arbitrary charge of 5 centimes (1 cent), with an additional charge of 5 centimes for every kilometer or fraction thereof traveled. This gives the average ride at a cost of either 2 or 3 cents. Commutation tickets in packages of fifty, one hundred and fifty, and three hundred coupons are issued at still cheaper rates, but even at the regular full rates a passenger can ride over the entire system for the moderate outlay of 30 centimes (about 6 cents).

The franchise granted by the canton to this street-railway company carries with it the condition that it shall run for only fifty years, and that at any time during such period the canton shall be entitled to the privilege of buying in the road on the following terms, viz: During the first thirty years, for a sum equal to twenty-five times the average net profit of the last previous ten years; between the thirtieth and fortieth years, for a sum equal to twenty-two and a half times such average; and between the fortieth and fiftieth years, for a sum equal to twenty times such average, it being, however, understood that, in no case, shall the sum paid be less than the original capital paid in, and furthermore that this privilege of buying in the road shall not be taken advantage of by the canton during the first fifteen years, except in the interest of the public welfare or safety. It is, of course, assumed that the company pays taxes as any other company does. It also pays for certain maintenance of the streets when its net profits exceed 5 per cent of its paid-up capital. Otherwise it is obligated to no monetary return to the franchise-granting authority.

The said authority, however, controls the charges made for transportation, fixing the rates of fare and the minimum of service to be rendered daily by the line in summer and winter. This is not to be regarded, however, as compulsion, but rather as a matter of mutual understanding between the authorities and the projectors of the scheme.

The facilities afforded by the horse railways are in the main satisfactory to the public, and the road pays a return of 5 per cent to the company. A movement is actively on foot for an extension of the system to various other points in the suburbs, and it is highly probable that, at the present rapid rate of Zurich's growth and development, the plan will be partially or wholly carried into execution at an early day.

FUNICULAR RAILWAY.

The inclined railway connecting the Limmat quay with the polytechnic school is now in its third year of operation, and though scarcely a quarter of a mile in length, it proves a great public convenience, somewhat in the nature of a passenger elevator. It is ultimately intended to continue it further up the mountain, nearly to the summit of the Zurichberg, but its present length is considered to satisfy all present public demands. The road is the property of a stock company, known as the Zurichbergbahn-Gesellschaft, operating under a charter from the cantonal authorities. It pays taxes as any

other corporation does, and is obligated by law to certain rates of fare and a certain minimum of service, as in the case of the horse railway company. The fare is 10 centimes (2 cents) for each trip, there being no stops between the termini. The authorities have no other return from the company than that coming from regular taxation. The undertaking paid in 1890 a yield of 6.45 per cent on the capital invested. The road is operated simply by water. There are but two cars, which pass each other by a turn-out midway, the one ascending, the other descending. The reservoir of the descending car is full of water, that of the ascending car being empty. The thus increased gravity of the descending car furnishes the power which drags the car with the empty reservoir up. By thus alternately filling the reservoir of each car on its arrival at the upper terminus and emptying it again when it reaches the lower terminus, a constant and regular motive power is obtained at a comparatively cheap cost. The road's water consumption last year cost only 4,814.50 francs ($900), which is certainly cheaper than coal, when coupled with the fact that no less than 47,443 double trips were made over the line.

UETLIBERG RAILWAY.

This road, the property of a stock company, in operation since 1875, connects the city with the summit of the Uetliberg Mountain, lying about 3 miles to the west. It is largely used as an excursion line, and depends greatly upon summer and tourist traffic, although trains are run regularly the year round. From the station at Zurich to the summit the road has a total rise of 399 meters (say 1,250 feet). As previously stated, it is worked by steam on what is known as the simple "adhesion" principle, and, though now in operation for sixteen years, has proved a safe and reliable road. In summer eight, and in winter four, trains are run each way daily, furnishing adequate and satisfactory accommodations to the public. The round trip costs 5 francs for a first-class and 3 francs for a second-class ticket. Commutation tickets are to be had at reduced rates for personal or family use, and special cheap rates are sometimes made for the early morning trains.

The company pays its taxes as any other corporation, but otherwise has no monetary obligation to the grantor of its franchise. A dividend of 1 per cent was declared for the year 1890.

SUBURBAN TRAINS.

Communication by rail between Zurich and the suburban towns and villages is cheap and frequent, and the daily travel by accommodation trains to and fro is large and lucrative. Four main lines, all operated by the Northeastern Railway Company, leave the central station, and these lines in turn, at various short distances, branch off into others, making the entire country within a radius of 20 miles about Zurich easily accessible from it by railway. The cars are, as everywhere in Europe, divided into three classes, but of the way travel at least 99 per cent travels in the second and third class cars, and divided between the two in about the ratio of five to nine.

Fares, as stated, are extremely cheap. By way of illustration, I give herewith a table showing the rates to twenty different suburban points, both for single and return tickets, viz:

Place.	Distance.	One way.			Round trip.		
		First class.	Second class.	Third class.	First class.	Second class.	Third class.
	km.	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*	*Francs.*
Oerlikon	5	0.55	0.40	0.30	0.85	0.60	0.45
Alstetten	5	.55	.40	.30	.85	.60	.45
Urdorf	9	.95	.65	.50	1.50	1.05	.75
Birmensdorf	13	1.35	.95	.70	2.05	1.40	1.00
Affoltern	25	2.60	1.85	1.30	3.90	2.60	1.85
Wallisellen	9	.95	.65	.50	1.50	1.05	.75
Buelach	21	.....	1.55	1.10	.....	2.20	1.55
Effretikon	17	1.80	1.25	.90	2.70	1.80	1.85
Kempthal	21	2.20	1.55	1.10	3.30	2.20	1.55
Winterthur	27	2.80	2.00	1.40	4.20	2.80	2.00
Dietikon	11	1.15	.80	.60	1.85	1.30	.95
Baden	23	2.40	1.70	1.20	3.60	2.40	1.70
Brugg	32	3.35	2.35	1.70	5.05	3.35	2.35
Aarau	50	5.20	3.65	2.60	7.80	5.20	3.65
Rueschlikon	11	1.15	.80	.60	1.85	1.30	.95
Thalweil	13	1.35	.95	.70	2.05	1.40	1.00
Horgen	17	1.80	1.25	.90	2.70	1.80	1.25
Waedensweil	25	2.60	1.85	1.30	3.90	2.60	1.85
Uster	21	2.25	1.60	1.15	3.60	2.60	1.85
Rapperswyl	43	4.50	2.60	1.85	7.20	3.55	2.50

Roughly estimating 5 kilometers as 3 miles and the franc at 20 cents we thus see that a passenger can ride second class, say, for instance, to Affoltern and back, a distance of 30 miles, for 52 cents, or third class for 37 cents; or to Aarau and back, a distance of 60 miles, for $1.04 second class, or 73 cents third class. The cheapness of these rates none accustomed to suburban railway travel will deny. Commutation tickets, as well as tickets by early and late trains for workingmen, are also sold at reduced rates. In winter forty-seven and in summer about sixty passenger trains leave the Zurich station daily. In addition to these, extra trains are run whenever any public festivity occurs requiring a more extended service. On the occasion of the recent carnival here the Northeastern Railway Company handled 38,000 passengers in a single day without an accident of any kind.

LAKE STEAMBOATS.

In the numerous villages on both shores of the lake of Zurich reside many whose daily occupations call them to and from the city. Those on the left bank are connected with Zurich by rail, and those on the right will also have direct railway communication within a year or two, but up to the present time their connection with the city has been for years past by steamboats, which make in winter eight and in summer twelve trips each way daily, touching at frequent intervals. The rates of fare correspond to those on the railway; in fact, the tickets to or from points reached by both boat

and train are valid by either conveyance. The boats are commodious and fast, and meet every requirement of freight and passenger travel.

CAB SERVICE.

One-horse cabs are both numerous and cheap in Zurich. There are nineteen stands regularly established in different parts of the city and suburbs, the ordinary five-minute trip costing only 60 centimes (12 cents) for either one or two persons. The tariff of prices is regulated by law as follows:

Time.	One or two persons.	Three or four persons.
	Francs.	*Francs.*
5 minutes	0.60	1.00
10 minutes	.80	1.20
15 minutes	1.00	1.40
20 minutes	1.30	1.80
25 minutes	1.60	2.20
30 minutes	1.90	2.60
35 minutes	2.10	2.90
40 minutes	2.30	3.20
45 minutes	2.50	3.40
50 minutes	2.60	3.60
55 minutes	2.70	3.80
60 minutes	2.80	4.00
Every additional 15 minutes up to 6 hours	.50	.70
Every additional 30 minutes after 6 hours	.50	.70

There are also additional charges for night services as follows: Ten centimes (2 cents) per quarter hour for double lamps, and 70 centimes (14 cents) per quarter hour as night tax from 10 p. m. to 6 a. m.

A special tariff is also prescribed for driving passengers out of the city to outlying suburban towns and villages. Without giving this tariff in full, its moderate rates may be fully illustrated by citing the fact that the price for two persons to Horgen, about 9 miles distant, is only 6 francs ($1.20).

GEORGE L. CATLIN,

UNITED STATES CONSULATE, *Consul.*

Zurich, May 30, 1891.

TURKEY.

CONSTANTINOPLE.

REPORT BY CONSUL-GENERAL SWEENEY.

There is only one system of horse cars in the city of Constantinople, which is run by a corporation called the Society of Tramways of Constantinople.

This system of horse cars is a stock corporation and is owned by shareholders.

The rates of fare charged are 3, 4, 6, and 8 cents, according to distance and in conformity with the provisions of the charter given to the corpora-

tion. On some lines, however, the rates of fare are necessarily lower, owing to the railway competition, and those for ordinary soldiers are fixed at the uniform rate of 2 cents for each soldier, irrespective of distance.

The municipality does not obtain from this corporation any taxes or shares in the profits, as the Society of Tramways of Constantinople has been established by decree of His Imperial Majesty the Sultan.

The charges made for transportation are determined by the local authorities in accordance with the charter granted to the corporation, which provides for the same.

The facilities afforded by the Society of Tramways of Constantinople are not satisfactory to the people, but at the beginning they were very profitable to the promoters of the enterprise, who actually sold almost all their shares, realizing a high profit. The advanced price of the shares, however, did not last long, and they have fallen very low, which has ruined many people. At present I am informed that the corporation distributes a dividend of about 5 per cent on the present value of the shares.

Z. T. SWEENEY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Constantinople, May 23, 1891.

THE UNITED KINGDOM.

BIRMINGHAM.

REPORT BY CONSUL JARRETT.

(1) The systems of public transportation in the city of Birmingham are omnibuses and horse, steam, cable, and electric trams.

(2) The tram and omnibus systems at the present time are chiefly in the hands of three large companies, viz, the Birmingham Central Tramways Company, the Birmingham and Aston Tramways Company, and the Birmingham and Midland Tramways Company. There is another firm, called the Birmingham and Western Districts Tramways Company, which operates a short line of about three-fourths of a mile. There are a few private firms working opposition omnibuses on some routes. The first-named company, however, practically monopolizes the greater part of the city. It has tram cars driven by horse, steam, cable, and electric power. It also runs omnibuses on several routes, localities of the city in which the wealthier classes live, and in which hitherto the opposition and influence of the people have been sufficiently powerful to prevent the building of the tramways.

(3) The rate of fare on the several routes is 1*d.* (2 cents) per mile. On omnibus routes the minimum fare is 2*d.* (4 cents).

(4) The various tramway companies have to pay imperial and local taxes for the use of the franchise granted to them. In imperial taxation they would pay income tax upon the net earnings as divided between the share-

holders, debenture holders, etc. They would also pay the annual license for vehicles of 15*s.* ($3.65) duty each. In local taxation of the tramway companies the principle adopted by the city authorities in assessing the ratable value is as follows, viz: On land, about 5 per cent on the market value; on buildings thereon, about 5 per cent on the cost; on lines, 4 per cent on the actual cost of construction of the line; on engine power, etc., 40*s.* ($9.73) per horse power per annum. Drivers and conductors also pay an annual license of 1*s.* (24 cents) each.

Regarding the construction of the tramways I may add that in some instances the city authorities have themselves promoted orders authorizing the construction of tramways, and in cases where the orders have been promoted by private persons or companies the city authorities have required as a condition of their consent (without which the companies could not proceed) that clauses should be inserted authorizing the city authorities within three months from the passing of the orders to elect to be substituted as promoters and to construct the tramways themselves. This power the city authorities have always exercised. The company has then to deposit a sum equal to £2,500 ($12,166.25) per mile of single lines as a security fund. The city authorities construct the lines and grant the company a lease for twenty-one years, charging a rental during the first fourteen years at the rate of 4 per cent, and during the last seven years at the rate of 5 per cent, on the cost of construction. The company also pays such a sum per annum as will amount at the end of the term (twenty-one years) to the original cost of construction, and they also pay the actual cost of maintaining the tramways in good and proper repair. At the end of the twenty-one years the lines will remain the property of the city corporation.

These particulars are set forth in the following table:

Table showing the particulars of tramway leases in the city of Birmingham.

Company to whom leased.	Route.	When lease expires.	Length of single line.
			Miles. Ch.
Birmingham and Aston Tramways Company.	Old Square to Aston	Dec. 30, 1903	2 4.2
Birmingham and Midland Tramways.	Summer Row to city boundary in Dudley road.	July 1, 1906	3 34.7
Birmingham and Western Districts Tramways Company.	Heath street	.....do.....	62.4
Birmingham Central Tramways Company.	Albert street to Nechells Park road; Aston street to Saltley road; Corporation street to Newtown Row; Station street to Moseley road; Fazeley street to Moat Row; Kyott's Lake road; Bradford street to Camp Hill and Stratford road; Rea street to Coventry road.	Jan. 1, 1907	15 40.5
	Station, Hill, Hurst, Bromsgrove, Lower Hurst, Sherlock, and Gooch streets; Sheflock and Benacre streets; John Bright and Station streets.	.....do.....	2 68.8
	Colmore Row to Hockley Brook (cable)	June 30, 1911	2 53.6
	Navigation street to Bournbrook (electric)	.....do.....	5 45.6
	Great Hampton Row and Wheeler street	.....do.....	66.2
Total			33 56

Table showing the particulars of tramway leases in the city of Birmingham—Continued.

Company to whom leased.	Certified cost.	Deposits made with corporation for securing fulfillment of leases.	Rent first fourteen years.	Rent last seven years.	Annual sinking fund payment during whole term.
Birmingham and Aston Tramsways Co.....	$32,619.60	$13,261.21	$1,995.26	$2,992.90	.....
Birmingham and Midland Tramways.....	85,916.33	41,780.12	3,436.72	4,295.90	$2,460.74
Birmingham and Western Districts Tramways Company.....	18,014.40	9,197.68	720.48	900.89	568.40
Birmingham Central Tramways Company..	392,716.44	188,652.94	15,708.57	19,635.84	11,247.94
Do.....	79,601.52	35,023.59	3,184.15	3,980.07	2,308.43
Do.....	66,418.23	32,561.75	2,656.62	3,320.90	1,902.32
Do.....	129,414.83	67,849.89	5,176.52	6,470.73	3,706.58
Do.....	20,931.25	9,656.95	837.28	1,046.53	599.55
Total.....	825,632.60	397,984.13	33,715.60	42,643.76	22,793.96

NOTE.—In addition to the payments above specified, each company pays the actual cost of repairing its tramways, as certified by the city surveyor, with the exception of the Birmingham and Aston Tramways Company, which pays a fixed sum of £205 per annum, plus a varying amount in respect of wear occasioned by the use of a portion of its lines by the Birmingham Central Tramways Company.

The charges for transportation have not been in any way interfered with by the local authorities until lately. In the case of the cable and electric tramways the local authorities granted the license on condition that the company should not charge a higher fare than 1*d.* (2 cents) per mile. It is safe to say that no leases will be granted in future except on this or similar conditions.

On nearly all the routes operated by steam trams and omnibuses the facilities afforded are fairly satisfactory to the people, at least I would so conclude from the observations I have been able to make. The cable and electric car systems are far from being satisfactory, being very irregular and unreliable. The cars on all the tramways are long, narrow, double-decked, ugly, and dirty affairs, having no kind of conveniences or provisions for the comfort of the traveling public. No American city would tolerate such hideous things. The electric cars are, however, a decided improvement, being quite neat and clean, but even these are so narrow that the conductor finds it very difficult to pass between the seated passengers inside the cars for the purpose of collecting the fares. Passengers are not allowed to stand inside or on the rear of the car. A notice is printed inside of each car stating the number of passengers that may be conveyed inside and outside, which must not be exceeded under any circumstances. The tramways are well made, I may say excellent; but I have no good word to say of the tram cars.

It is an exceedingly difficult matter to determine to what extent the various tramway systems are financially profitable to those engaged in the business of operating them. Broadly speaking, the board of trade returns show the average interest received on all tramway investments in the country at about 5 per cent. There are several companies that pay more, and several that earn no profit. I append herewith the last annual report of the

directors of the Birmingham Central Tramways Company (limited), which is representative of the profits of the various tramway companies of this city:

REPORT OF THE DIRECTORS OF THE BIRMINGHAM CENTRAL TRAMWAYS COMPANY (LIMITED).

The continued improvement of traffic and profit is evidenced by the following comparative statement:

Year ending June 30—	Distance run.	Passengers carried.	Traffic receipts, etc.	Working expenses.	Working profits.
	Miles.	*Number.*	£ s. d.	£ s. d.	£ s. d.
1888	1,913,936	15,821,441	100,664 15 3	70,354 18 0	30,309 17 3
1889	2,073,505	18,372,409	115,426 10 9	77,947 11 2	37,478 19 7
1890	2,426,280	22,182,041	133,215 9 6	88,339 7 0	44,876 2 6

The revenue account shows a balance of £29,688 6*s.* 8*d.*, to which has to be added the sum of £6,893 10*s.* 4*d.* brought forward from last year's accounts, making together £36,581 17*s.*

Your directors recommend—

(1) That the sum of £10,000 be placed to reserve account against depreciation.

(2) That the payment of the dividend upon the 5 per cent guarantied shares (interim £2,443 on January 1 and £2,494 10*s.* on July 1), amounting to £4,937 10*s.*, be confirmed.

(3) That a dividend of 4 per cent for the year ending June 30, 1890, be declared and paid upon the ordinary shares of the company, amounting to £15,520.

(4) That the balance of revenue account, amounting to £6,124 7*s.*, be carried forward.

By order of the board.

W. HOLMDEN,
Secretary.

LABOR AND WAGES.

The cable service is worked by sixteen cars on all the days of the week, except Saturday, when there are two extra cars running. All these cars are on the road an average of sixteen hours a day, but relief is given to the drivers and conductors for periods varying from two and a half to three and a half hours. Meals have to be taken while traveling, except when mealtime comes around during a man's relief. Men are expected to be at the depot in the morning fifteen minutes before starting, and the conductors are occupied from ten to twenty minutes at night in getting their accounts squared by a clerk. Each man works more than thirteen hours a day the week round.

Conductors' wages for the first two years are 3*s.* 6*d.* (85 cents) a day; after two years, if no complaints have been made against them, they are entitled to 3*d.* (6 cents) a day more; after three years' service conductors' wages are 4*s.* (97 cents) a day. Drivers begin at 4*s.* 6*d.* ($1.09 a day, and, after six months' service, rise to 5*s.* ($1.22) a day, and after one year's service to 5*s.* 6*d.* ($1.34) a day.

On all the routes furnished with steam trams the labor is divided on a system similar to that which applies on the cable line, the reliefs being so arranged that all regular men have to work not less than twelve hours a day for six days, or seventy-two hours a week. Steam tram (small locomotives) drivers are paid 4*s.* ($1.09) a day to begin with, and their wages rise to

5*s.* 6*d.* ($1.34) a day after one year's service. Conductors commence at 3*s.* (73 cents) a day, with the same opportunities of increase as the cable conductors.

On the electric-car route labor is employed twelve hours a day for six days, or seventy-two hours a week. Electric-car drivers are paid 4*s.* 9*d.* ($1.15) a day to begin with, and after one year's service 5*s.* 9*d.* ($1.40) a day. Conductors begin with 3*s.* 3*d.* (79 cents) on this route, with the same opportunities as those of the routes already referred to.

In the omnibus service drivers are paid from 4*s.* (97 cents) to 5*s.* ($1.22) a day, and conductors are paid 3*s.* (73 cents) a day.

There are certain regulations applying throughout the Central Tramways Company's system which the men regard as drawbacks, and some of them resist as grievances. Drivers and conductors are compelled to pay out of their wages 6*d.* (12 cents) a week to the funds of a sick club, 1*d.* (2 cents) to an accident fund, and one-half of 1*d.* (1 cent) to the hospital Saturday fund.

The bell punch supplied to the conductors is very much complained of. The following are offenses for which conductors are liable to instant suspension by the company's officials, pending a decision at headquarters: Missing a fare or fares; neglecting to make waybills out properly on each journey going and returning; allowing anyone to ride on either platform of a car, and talking with them; neglecting to give a correct account of season tickets on each journey, or of free passes; punching a ticket in a wrong place, *i. e.*, in any other part of the ticket than that which bears the name of the stage for which it is issued. Men are also fined if they are late in the morning 6*d.* (12 cents) for the first offense and 1*s.* (24 cents) for the second. If there be plenty of spare men available they lose a day's work. Conductors must also make good any deficiencies occurring through the acceptance of bad money or the giving of wrong change. Drivers are liable to prosecution by the civil authorities for showing smoke or steam, running too fast, or getting too close to a preceding car.

JOHN JARRETT,
Consul.

UNITED STATES CONSULATE,
Birmingham, May 30, 1891.

BELFAST.

REPORT BY VICE-CONSUL RUBY.

TRAMWAYS.

Belfast is the only city in the north of Ireland possessing a street railway or tramway line. This is owned by a corporation known as the Belfast Street-Tramway Company. The service is said to be among the cheapest and most effective in Great Britain. The tram cars are drawn by horses. They have seats on top, and can carry about fifty passengers. In connection with the

line is a steam tram which runs between Belfast and an outlying village, about 3½ miles. There is also an electric tramway running between Portrush and the Giant's Causeway, a distance of about 7 miles, but it has never been a success, and during a large part of the time has to be run by steam.

The city obtains from the Belfast Street Tramway Company annually poor rates and municipal rates amounting to about £50 per mile of track, and also has the option of purchasing the tramway lines after August, 1893. The terms are perfectly satisfactory to the tramway company. The company builds their own cars, which, fully upholstered, cost about £170 each. They also make their own harness and lay their track. They earn a net profit of about 11½ per cent on their capital stock. They declare annual dividends of 8 per cent, and allow the balance to accumulate as a surplus.

Tramway fares in Great Britain are regulated by act of Parliament, which fixes 2*d.* per mile as the maximum charge, but does not require that less than 2*d.* shall be accepted for any distance, however short. The fares in Belfast are much below the limit. There is a "penny stage" which carries the passenger 1¼ to 1½ miles for 1*d.*, with greater advantages if a 2*d.* or 3*d.* ticket is taken, the latter fare carrying the passenger any distance up to 5½ miles.

The tramway company is required by the local authorities to run a certain number of cars in the early morning and evening for artisans and laborers at 1*d.* for 2 miles, or about half fare. No other restrictions are put on the fare.

The company have in operation about 20 miles of track, of which about 65 per cent is double. They have in daily use about ninety cars and own about eight hundred horses. The number of employés averages about five hundred, and their wages are as follows: Drivers and conductors, 3*s.* to 4*s.* per day for ten hours' work; coach-builders, 5*s.* 6*d.* per day for nine and a half hours' work; painters, 5*s.* 6*d.* per day for nine and a half hours' work; harness-makers, 5*s.* per day for nine and a half hours' work; stable men, 22*s.* 6*d.* per week; inspectors, 32*s.* 6*d.* to 40*s.* per week.

OMNIBUSES.

In 1889 a company called the Belfast Omnibus and Carriage Company was started in opposition to the tramway company, with omnibuses (with seats on top) to hold twenty-five persons, the fare being 1*d.* for about 2 miles. As the tramway is practically as cheap and a great deal more comfortable for the passengers, the company has met with very poor success, and the number of omnibuses is now reduced to seven.

JAUNTING CARS.

The jaunting car is a vehicle entirely peculiar to Ireland, where it is used to the exclusion of hansom cabs. There are about six hundred in use in this city, exclusive of private cars. The license is fixed at 2*s.* 6*d.* per year for each car, and the same amount for each driver. All licenses expire on December 31. License is granted or refused by the police authorities after investigating the character of the applicant.

The fares are fixed by the town council, and are as follows: For one or two passengers, 6*d.* per mile and 3*d.* for every additional half mile; for three passengers, 8*d.* per mile and 4*d.* for every additional half mile; for four passengers, 10*d.* per mile and 5*d.* for every additional half mile; for five passengers, 1*s.* per mile and 6*d.* for every additional half mile; for six passengers, 1*s.* 2*d.* per mile and 7*d.* for every additional half mile. Time rates within the city are: For one or two passengers, 1*s.* 6*d.* per hour and 9*d.* for every additional half hour; for three or more passengers, 2*s.* per hour and 1*s.* for every additional half hour. However, the drivers here endeavor to keep up the reputation of the proverbial "jarvey," who is never satisfied with his proper fare, and, as a rule, will accept nothing less than 1*s.*

RALPH O. RUBY,
Vice-Consul.

UNITED STATES CONSULATE,
Belfast, June 16, 1891.

DUBLIN.

REPORT BY DEPUTY CONSUL REID.

The city of Dublin proper occupies an area of 3,808 acres. Its shape is roughly that of an ellipse 9 miles in circumference, inclosed by a circular road and two canals. The Dublin metropolitan police district comprises an area within and without the municipal boundary of 24,768 acres, and in this district there is a population of somewhat more than 350,000. These people, and the few who have business in Dublin but live without the boundary named, depend for transportation upon four different systems, the tram system or horse cars, the steam railway, steam trams, and hackney vehicles, the last of which includes the ever-ready outside car, or what is more commonly known as the Irish jaunting car.

It may not be quite proper to include the cabs and outside cars as one of the transportation systems in Dublin, but they are so convenient, so cheap, and so generally used by the public, that a few remarks regarding their management may not be considered out of place. They are owned either by individuals or by corporations; drivers are employed, and each driver has the management of his horse and carriage, and is subject to the rules laid down for all. Each vehicle is licensed by the commissioner of police, and all regulations as to hiring and fares are controlled by the police, and to them are drivers and proprietors accountable for misconduct.

The fares are governed either by time or by distance, as the hirer may decide at the end of the engagement. A direct drive between any two places within the municipal boundary, without regard to time or distance, is 6*d.* (12 cents) for one or two persons and 1*s.* (24 cents) for more than two persons. The charge by time within the boundary for any number of persons is 1*s.* 6*d.* (36 cents) for the first hour and 6*d.* additional for each

half hour commenced thereafter. The fares, partly or wholly without the city boundary, are as follows: By distance, a fare of 6*d.* per mile is charged for one or two persons going, and 3*d.* per mile returning by the same vehicle. By time, 6*d.* is charged for two persons for every ten minutes and 1*s.* for more than two, and 2*s.* for any number of persons for the first hour and 9*d.* (18 cents) for each half hour thereafter. At night the charges are a very little higher than by day. The jaunting car is a very popular vehicle with people in Ireland, and is in constant demand; the weight, being nicely balanced on its two wheels, gives the horse a minimum amount of work, and great speed is therefore easily maintained; for short distances 10 miles per hour is common.

The main lines of Irish railways for a few miles out of Dublin are used for suburban traffic. There are four railway companies running trains in different directions, the most important of these for local transportation being the Dublin, Wicklow, and Wexford Railway Company, as its lines run through the favorite residence suburbs of Dublin and to the pleasant seaside resorts on the coast to the south of the city. The 12 miles of this road which are nearest to Dublin are owned by the Dublin and Kingstown Railway Company, the shareholders of which get 9 per cent dividend from the rental of the road to the Dublin, Wicklow, and Wexford company. The stockholders of the last-named company usually receive about 1½ per cent interest on their investments. If the whole road were owned by one corporation it would pay fair dividends, even though the only profitable part of the road is that which is used for suburban traffic.

The ordinary rates of fare charged average about 2*d.* (4 cents) per mile first class, 1½*d.* (3 cents) second class, and 1*d* (2 cents) third class. Commutation is given at reduced rates; one, three, six, and twelve month tickets are sold. These entitle the holder to as many trips as he wishes to take while he holds the ticket. The charges for monthly tickets range from 10*s.* 6*d.* ($2.55) first class and 9*s.* 6*d.* ($2.31) second class to a station 1 mile distant from the Dublin terminus to £2 1*s.* 6*d.* ($10.10) first class and £1 18*s.* 6*d.* ($9.36) second class to a station 13 miles from Dublin. The yearly tickets cost £4 4*s.* ($20.43) and £3 3*s.* ($15.33) to the 1-mile station and £17 12*s.* ($85.65) and £15 8*s.* ($74.94) to the 13-mile station. The trains are run at convenient intervals, usually three, and sometimes four, per hour. The management of the road is good, the only complaint of the people being that the carriages are not as good as they ought to be, and they certainly do not compare favorably with those on English roads.

There are two steam tramways in Dublin, one of which, known as the Dublin and Blessington Steam Tramway Company, as shown by its half-yearly report recently published, is just able to exist and that is all, its net profits for the half year being less than £75 ($365). The Dublin and Lucan Steam Tramway is a well-managed and good-paying company having £40,000 ($194,660) capital. It works 7 miles of railway, using the ordinary inclosed dummy engines. The fares charged on the steam trams are about the same as those of the ordinary railways.

The principal system of transportation in Dublin and vicinity is that supplied by the Dublin United Tramways Company. This company was formed in 1881 by the consolidation of the three tramway companies which then existed. It has a capital of £625,310 ($3,043,071), which includes an amount of £76,600 ($372,574) raised by loans, guarantied by 4 per cent mortgage bonds. It owns 32 miles of track, 1,100 horses, and 156 fully equipped street cars. There are no less than fifteen different routes over which its cars run. It carried nearly 17,000,000 passengers within the last year. The average fare received was 1.72*d.* (about 3½ cents).

The tramway fares are divided into 1*d.* sections, according to distance and traffic requirements, but there is no fixed uniform distance rate. The maximum fare is 3*d.* (6 cents), or about 1*d.* per mile. It has been the tendency of the company to reduce the fares; they find it profitable. Ten years ago penny fares were unknown; now their annual traffic receipts exceed those of 1881 by one-fifth or £20,000 ($97,330).

The cars used by this company are called the improved garden-seat type. All but a few of them have circular flights of steps at each end by which the roofs of the cars are easily reached, where there are seats for thirty passengers; in the interior there is accommodation for twenty-one more. The company builds its own cars at a cost of £195 ($949) each, it having works for that purpose and for repairs at Inchicore, one of the suburbs of Dublin.

The horses used for this service are of a very superior kind, the company paying £28 ($136.26) per head for them. The General Government pays to this company, as to many others in the United Kingdom, an annual subsidy of 10*s.* ($2.43) for each horse that is judged, by an army officer appointed for the purpose, to be above a certain standard of excellence as to age, size, and condition. In case of war the Government may at any moment take all or any of the horses so subsidized by paying to the company £40 ($194.66) for each. This custom is beneficial in three ways, viz, to the Government, because in case of need it could, at short notice, collect as many horses as it would require, and at a low price as compared to what it would have to pay if it had not in this way provided for the emergency; to the tramway companies, on account of the small addition to their annual income, for, in case of war, the Dublin company would sell each horse at a profit of 43 per cent, and it is not at all likely that the number of animals required by the Government would in any way seriously interfere with their business; and the people are benefited because of the high-grade stock that the tramway company must keep in order to avail themselves of this subsidy. Of course, great care is taken to keep the horses in good condition. The stables are perfectly ventilated, kept scrupulously clean, and frequently whitewashed. The bedding consists of nearly equal quantities of sea sand and sawdust, which is cheap, clean, and healthful. Cut hay and grain is fed with excellent result and at a cost of about 7*s.* 6*d.* ($1.80) per week for each horse.

The municipality obtains no return for the use of the franchise, except what it collects by taxation. The tramways are authorized by acts of Parlia-

ment; they pay "rates" to the local authorities, assessed on the ratable value of the lines, and, in addition, must maintain the lines in good condition. A Government tax or stage license of £4 ($19.46) annually on each car is also paid. Previous to this year this tax was £8.

The fares are in no way controlled by the local authorities. An act of Parliament specifies maximum rates, of which, however, the company never avails itself, as experience has proved that popular or cheap fares induce traffic and pay best.

The Dublin United Tramways Company, in addition to the regular passenger service, operates a system of express delivery of parcels, which is of great convenience to the public and a source of no small revenue to the stockholders. A messenger from one of the various stations of the company throughout the city will, on application, be sent for a parcel, or it may be handed to any tram conductor; it is then sent to the station nearest its destination and is delivered by a messenger. The fees charged are *2d.* (4 cents) for 7 pounds, *3d.* for 14 pounds, and *4d.* for 28 pounds.

From the last half-yearly report, issued June 30, 1891, the total receipts of this company were £60,943 *9s. 9d.* ($296,581.48), composed of traffic receipts to the amount of £58,068; receipts for advertisements exhibited in cars, £1,547 ($7,530); for parcel delivery, £870; and sundry lesser sums to make the aforesaid amount. The total expenses of the company were £47,407 *8s. 10d.* ($230,708.30), which consisted of working expenses to the amount of £40,667 and of repairs and reconstruction of lines for the balance. This left a profit of £13,536 *11d.* ($65,873.16) out of which to pay interest on mortgage bonds and dividends to stockholders. The company pays from 4 to 5 per cent annually.

To the question as to whether the facilities afforded are satisfactory to the people there can be but one answer, and that in the affirmative. The Dublin United Tramways Company, as I have learned from several authorities competent to judge, is one of the best-managed corporations of its sort in the world. Mr. William Anderson, the secretary and manager, to whom I am indebted for the greater part of the information contained in this report, is well known to all tramway companies, certainly throughout Europe. An experience of over thirty years has made him thoroughly conversant with the business in all its phases. To him is mostly due the perfect system of the Dublin company, and, as a result, he possesses the highest confidence and esteem of his fellow shareholders and directors.

The system of track-building in Dublin is one which could be copied with great advantage in the United States. The street where the track is to be laid is excavated to the depth of 13 inches; a 6-inch layer of concrete is then put down, tamped solid to a uniform thickness and allowed to harden. Steel rails, weighing 90 pounds to the yard, are then laid directly on this foundation; a thin layer of sand is spread over the concrete, into which the paving blocks are set; the interstices between the blocks are filled with gravel, and then melted tar is poured over the whole, making the road im-

pervious to water and very even and perfect. The top of the rail is exactly flush with the surface of the road. The street-car tracks are therefore no nuisance or hindrance to the ordinary city traffic. The cost of building such a road in Dublin is a little less than £3,000 (about $14,500) per mile.

W. A. REID,
Deputy Consul.

UNITED STATES CONSULATE,
Dublin, August 1, 1891.

GLASGOW.

REPORT BY CONSUL BROWN.

(1) The systems of public transportation in this city are horse cars, omnibus lines, and underground railways.

(2) The street-car lines are owned by the city, the omnibus line by the company (a limited liability company) which operates the street-car lines, and the underground system is owned by the North British Railway Company, and is not a complete system, but one intended to reach as many people as possible in connection with their extended or suburban lines. A more comprehensive underground system of belt lines is now being constructed by a limited corporation of the city, which it is intended to complete in about three years.

(3) The minimum rate of fare charged is 1*d.* (2 cents) per mile on all lines, that is, on the street cars, omnibus lines, and third-class underground cars. First-class underground fare is about one-half more. The rates on omnibus lines and street cars are fixed by the city. The lines are divided into sections of 1 mile each, and the charge is as above, with the exception that, if a car is boarded just before arrival at a station or if one rides beyond a station though only a small part of a mile, 1*d.* more is charged. A full mile between stations in every case is 1*d.*

(4) The municipality obtains nothing from corporations that it does not own for the use of the franchise that it grants, except license fees and taxes. The municipality receives from the corporation operating the street-car lines £150 per mile per annum.

(5) As stated above, the charges made for transportation are fixed by the local authorities, and rules are laid down governing the operation of the lines.

(6) The facilities afforded are not satisfactory to the people, and hence the projected underground system. The systems in operation are supposed to be very profitable.

LEVI W. BROWN,
Consul.

UNITED STATES CONSULATE,
Glasgow, June 10, 1891.

LIVERPOOL DISTRICT.

REPORT BY CONSUL SHERMAN.

(1) The systems employed for urban and suburban transportation in this consular district are: In Liverpool, horse cars and omnibuses; in Barrow-in-Furness and St. Helen's, steam cars.

(2) In Liverpool the rails are laid down, owned, and kept in repair by the municipality; in Barrow-in-Furness and St. Helen's, by the car companies.

(3) Car fares range from 2 to 14 cents, according to distance; omnibus fares, 2 to 12 cents. Conductors are required to give each passenger a ticket in which he punches with a bell punch one hole for each penny paid. The tickets are printed on a strip of paper, rolled and held in a box suspended from the conductor's shoulder. The box contains a separate roll of tickets for each rate charged on the line. The following is printed on the tickets, all of which are alike save in the number of punch holes:

General notice.—This ticket is for two punch holes only. In the presence of the passenger the conductor must punch in the ticket one hole for every penny, in accordance with the number of pence demanded for the fare. This ticket is not transferable, and is only available on the trip issued. It must be retained and produced when required, in accordance with the city by-laws.

On the reverse side is the following:

Ticket for two punch holes only. To be destroyed by passenger after leaving the car. Each punch hole represents a receipt for 1*d.* only. Passengers are requested to pay no more pennies than for which the conductor punches holes in the ticket, which must be punched in the presence of the passenger.

As a further check on the conductor he must keep a record in plain sight of the number of passengers. This he does by crossing the printed figures on a card fixed to the side of the box of tickets or hung at the door; and occasionally along the route this card and the number of passengers are inspected by an officer of the company.

A commendable feature of the service in Liverpool is to allow only as many passengers as can be comfortably seated. The cars and omnibuses all have seats on top. The carrying capacity is twelve to eighteen inside and sixteen to twenty outside. An act of Parliament requires that each passenger must be allotted at least 17 inches of sitting space.

Drivers and conductors of omnibuses and tram cars are required to take out a license, for which a fee of 1*s.* 6*d.* (36 cents) is charged. A metal badge is furnished bearing the number of the license, which is required to be worn while on duty so as to be plainly visible to the passengers. The fee for a license for a car is 2*s.* 6*d.* (60 cents). These licenses are required to be renewed annually. No charge is made for renewal.

(4) In Liverpool the car company has to pay 10 per cent on the cost of the rails, in St. Helen's the company must keep the roads in repair between

the rails and 18 inches on each side, and in Barrow-in-Furness only the ordinary taxes, etc.

(5) In Barrow-in-Furness and St. Helen's the maximum fares to be charged are fixed by Parliament. In Liverpool the maximum fares are fixed under articles of agreement between the tramway company and the corporation.

The local authorities do not compel the transportation corporations to perform services which they would not undertake except under compulsion.

(6) The facilities afforded are satisfactory to the people, and financially profitable to those engaged in the business of supplying them.

THOS. H. SHERMAN,
Consul.

UNITED STATES CONSULATE,
Liverpool, June 30, 1891.

LONDON.

REPORT BY CONSUL-GENERAL NEW.

(1) The public transportation of passengers in London is carried on by omnibuses, tramways, steamboats, railways, and cabs.

Omnibuses are owned by twenty-three companies, the two principal ones being the London General Omnibus Company (limited) and the London Road-Car Company (limited). These omnibuses are drawn by horses, and are usually arranged to seat twenty-six passengers, fourteen outside and twelve inside. There are about 2,100 of these vehicles in use. The two large companies mentioned carry about 70,000,000 passengers a year, each omnibus earning from $75 to $80 a week.

There are ten tramway companies, eight using horses for the motive power, one using stored electricity, and one being a cable line. There are about 950 cars in use on these lines.

One company, the Victoria Steamboat Association (limited), having entire control of the business, runs steamboats for the traffic up and down the Thames River.

Of railways, there are three underground, two using steam for motive power and one electricity, and seventeen surface railroads running out of London which carry passengers by very frequent trains to and from the suburbs, which extend in all directions some 15 miles from Charing Cross.

Cabs, of which there are about 7,500 two-wheeled vehicles, or hansoms, and about 4,000 of what are known as four-wheelers. These are much used in the central part of London.

(2) The tramways, railways, steamboat association, and the two large omnibus companies are owned by limited companies, while private owners are proprietors of a few omnibuses and of all the cabs. No branch of the local transportation is owned or operated by the municipality.

(3) The tram-car rates are generally about 2 cents per mile. The omnibus fares are somewhat varied, owing to competition, but ordinarily the fare is 2 cents for about 2 miles. The steamboat rates are about one-half of 1 cent per mile in winter, and in summer and on Sundays the rates are doubled. The railway fare for third-class passengers is fixed by law at 2 cents per mile, but on noncompetitive routes these passengers are limited to certain trains. The cab fares, for one or two persons, are 12 cents per mile within the 4-mile radius from the Charing Cross center and 24 cents without that radius, no fare being less than 24 cents.

(4) The only taxes which the municipality levies on railway and tramway companies is a local tax on the value of the concern. All tram cars, omnibuses, and cabs, and also the drivers, pay a few dollars for a license. But this tax is only imposed to obtain control of the carriages and men.

(5) The charges for transportation are agreed upon between the tram-car companies and the board of trade when a provisional order to construct a line is obtained, the railway charges are fixed by act of Parliament, the omnibus charges by competition, and the cab and steamboat fares by the local authorities.

The local authorities can not compel the corporations to perform services which they would not undertake except under compulsion, but the local authorities have power to purchase, at the value only, the stock, lands, buildings, works, material, and plant of the tramway company at the end of twenty-one years.

(6) The facilities are fairly satisfactory, and the proprietors earn a fair dividend on their investment.

In this connection, I may say that the tramway companies are required, under the tramways act—

> At their own expense, to keep in good condition and repair, with such materials and in such manner as the road authority shall direct, and to their satisfaction, so much of any road whereon any tramway * * * is laid as lies between the rails of the tramway; and (where two tramways are laid by the same promoters in any road at a distance of not more than 4 feet from each other) the portion of the road between the tramways, and in every case so much of the road as extends 18 inches beyond the rails of and on each side of any such tramway.

These tramway companies are under the general control of the board of trade, which has issued a set of rules for their government.

JOHN C. NEW,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
London, June 5, 1891.

CONTINENT OF AFRICA.

EGYPT.

REPORT BY CONSUL-GENERAL ANDERSON, OF CAIRO.

Egypt has no urban transportation facilities or corporations such as those designated in the Department circular. In Cairo there is a line of vehicles that can hardly be called omnibuses passing the chief public buildings, a distance of about half a mile, the fare being a small piaster, or 2½ cents. In Alexandria there is a similar line passing principal points for about the same distance, the fare being 5 cents. Each of these lines is owned by an individual, whose franchise, I am informed, is nothing more than a permit, which carries no exclusive privileges.

Good carriages are so numerous and the fare so reasonable, to say nothing of the omnipresent donkey and donkey boy, that there is hardly a demand for street-car lines.

JNO. A. ANDERSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Cairo, November 9, 1891.

SOUTH AFRICA.

REPORT BY CONSUL HOLLIS, OF CAPE TOWN.

As yet there is only one railway service for local and suburban travel from Cape Town to Simonstown, distant 22½ miles, though a new steam railway is just finished from the city to a populous neighborhood on the Atlantic side, 3½ miles from the city. This line is not yet in operation. The latter is the property of a corporation, while the line first mentioned and all the other railways in South Africa, with few exceptions, are owned and operated by the Government. This line leaves the main road about 2 miles from the city and serves sixteen stations between the city and Simonstown. The cars are of the usual English type, fairly well equipped, and are lighted by electricity; no heating is required. They are run at intervals of half an hour during a portion of the day and at others one hour. Taking a station at 17 miles from the city, single fares for the three classes are 56, 46, and 32 cents, respectively, while the monthly tickets are $10.10, $8.15, and $5.47. On two days of the week a return ticket is sold for a single fare. For the full distance of the line (22½ miles) the prices of tickets for the

same classes are 73, 60, and 42 cents, with the same privilege of return tickets as the first named.

There are two lines of tramways or horse cars, one operating 5 miles and the other 3 miles. Both are owned by corporations. The rate of fare charged by each line is 3 cents per mile, and is controlled by distance, the longest line having five different tariff points on its line.

The sum obtained by the municipality for the franchises granted these two lines is only about $125. The local authorities have no voice in determining the tariff of charges, this being entirely in the hands of the corporations.

There are two short lines of omnibuses, charging about the same rates. Port Elizabeth, Kimberley, Durban, and Natal also have tramway lines under similar conditions.

The facilities are not what the people have a right to expect, and complaints are frequent. The company in Cape Town having the longest line runs cars to the right and left, so to speak; on the one side they run till late at night and on the other cease running at 8 p. m., alleging that that portion does not pay to run later, notwithstanding a dividend of 10 per cent was declared last year, with an amount of 30 per cent to the reserve fund, and that the reserve and depreciation fund amounts to nearly 40 per cent of the capital stock and bonded indebtedness.

The opening up of the shorter steam railway already mentioned will undoubtedly change all this.

GEO. F. HOLLIS,
Consul.

UNITED STATES CONSULATE,
Cape Town, November 4, 1891.

CONTINENT OF AMERICA.

CANADA.

NOVA SCOTIA.

REPORT BY CONSUL-GENERAL FRYE, OF HALIFAX.

(1) The only systems of urban or suburban transportation known in this province are horse cars, omnibuses, and hacks. It might be added that the Intercolonial and the Windsor and Annapolis railways, operating in Nova Scotia, make special rates for people who reside in suburban places on the line of these roads and to others desiring the frequent use of that means of conveyance for short distances.

(2) The railways and horse-car lines are owned by corporations. The Halifax Street Railway Company is the only one in Nova Scotia. The Intercolonial Railway is owned and managed by the Dominion Government.

(3) The rates of fare on the street railway is 5 cents for any distance one way over the line, which is from 2 to 3 miles in length. The legal rate for hack fare is 25 cents per passenger, without baggage, to any part of the city, or $1 per hour.

(4) The property of the horse railway company is taxed like other property, but the municipality receives no shares of the profits or other monetary return from the company.

(5) The charges for transportation on the street railway cars, omnibuses, and hacks are subject to the control of the local authorities in some respects. The horse-car rate can not exceed 5 cents, except by permission of the city authorities. Hack fares are also regulated by the city.

(6) The facilities afforded for local transportation may be said to be fairly satisfactory to the people, considering that it is understood that much extension of the street railway lines over the streets of the city and suburbs not traversed by the cars would not be self-supporting. It is not believed that the street railway is at present financially profitable to the stockholders.

WAKEFIELD G. FRYE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Halifax, June 17, 1891.

OTTAWA.

REPORT BY CONSUL-GENERAL LAY.

Horse and steam cars are in use in this city. An electric railway is under construction and will be in operation by August 1 next.

The railways are owned by corporations.

The rate of fare by steam cars to outlying places, say within 20 miles of the city, is, for monthly, quarterly, and half-yearly tickets, about 2 cents per mile. For instance, for this season, a 10-mile trip on a three-months' ticket would cost 20 cents, a reduction from regular rates of 1 cent per mile, the latter being 3 cents per mile. The rates of fare for street horse cars for a distance not exceeding 3 miles must not exceed 5 cents, and for additional distance not to exceed 1 cent per mile. These rates apply within the municipality.

In the case of the horse-car railway, the company and municipality, by mutual agreement, share the cost of maintaining the portion of the street occupied and used by the company. In the case of the electric railway (under construction), the company, by agreement with the municipality, will pay to the latter $300 per mile for single and $400 per mile for double tracks per annum, in consideration of the municipality keeping the roadbed flush with the rails, as required by statute. The companies are free from taxation, excepting upon real estate.

The maximum rate of fare is fixed by statute. In the case of street railways, lesser rates or specially reduced rates for certain hours are made between the municipality and the company when the franchise is granted, and subsequently may be made by mutual agreement.

The horse-car service is financially profitable to the company, but not satisfactory to the public; consequently the franchise was granted to the electric company in expectation of more frequent, rapid, and satisfactory service.

RICHARD G. LAY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Ottawa, June 15, 1891.

No. 139——7.

QUEBEC.

REPORT BY CONSUL RYDER.

Quebec is the only city in this consular district which maintains public conveyances for urban and suburban transportation. There are two lines of horse cars—the Quebec Street-Railway Company, holding a charter for the lower town, and the St. John Street-Railway Company, for the upper town. The former has 3 miles of track, 4 feet 8¾ inch gauge, and a capital of $50,000. As an investment it pays a handsome dividend, about 18 per cent per annum. The latter company operates only 1⅓ miles (same gauge), with a capital of $30,000. Travel on this road is limited, as the line passes through a more sparsely settled portion of the city. Stock in this company has been an undesirable investment, yet, while no dividends are declared, the obligations of the road have always been promptly met.

Quebec being built upon two distinct levels, one nearly 200 feet above the other, a car could not be safely run upon the steep hills connecting the upper and lower portions of the city; therefore, to meet this requirement there is an elevator propelled by hydraulic power, which is liberally patronized. This, however, can only be used in the summer season, on account of the extreme severity of winter. The fares are reasonable, being two trips for 5 cents. The elevator company considers that its stock will be a good investment before long. This is comparatively a new venture.

Both street-railway companies are stock corporations. The municipality receives nothing in return for the franchises granted. The property is not exempt from taxation. Charges for transportation are not in any way determined by the local authorities, excepting the stipulation in charters that "the fare shall be not more than 5 cents for each trip." Tickets are also sold in packages of twenty-five for $1 and one hundred for $3. This move has recently been inaugurated by the management, in order to induce residents to patronize the cars, and the company already find their receipts increasing beyond their expectations. The officers of these roads are of opinion that there is more money in carrying cars full of passengers at 3 cents than nearly empty ones at 5 cents. It has been a success here.

Rolling stock is a more expensive item here than in most cities, as it must include cars, sleighs, and omnibuses. The latter are used for two months in spring, when the roads are "breaking up," the heavy frosts rendering thoroughfares almost impassable for several weeks. The rails used in construction are of Philadelphia steel, and the cars are built by the John Stephenson Company, of New York. Originally cars of Ontario manufacture were in use, but, owing to their heavy build, were discarded for the Stephenson, which are 1,200 pounds lighter.

Beside these lines, suburban omnibuses are largely patronized. There is one from Quebec to St. Foy, a distance of 5½ miles, four times each day;

fare, 10 cents. Three competing lines are struggling for the patronage from Quebec to L'Ange Gardien, passing through Beauport, Montmorency, and Chateau Richer. The distance is 15 miles, and fares vary from 10 to 20 cents a trip. Another carries passengers and freight from Quebec to Cap Rouge, 9 miles; fare, 20 cents. There are also omnibuses to Sillery Cove, 6 miles, and the fare is 15 cents. These are all owned by private individuals, and barely meet expenses.

The facilities afforded for urban and suburban transportation appear to satisfy the majority of residents on the respective lines; yet, here as elsewhere, fault-finders are to be found.

FREDERICK M. RYDER,
Consul.

UNITED STATES CONSULATE,
Quebec, June 5, 1891.

TORONTO.

REPORT BY CONSUL POPE.

(1) In the city of Toronto there are three systems of public transportation for urban and suburban districts. In the city proper only horse cars are used; in the northern suburbs there is an electric system, and in the eastern and western districts steam cars.

(2) Private parties had a franchise for the city horse-car system, which expired last March, and, while new tenders are being called for, the city is managing the railway.

(3) On the horse and electric cars there is a universal fare of 5 cents. On the former system, however, tickets can be purchased at the rate of six for 25 cents. These fares cover the full distance any line may extend to, but no transfers are given. The steam cars issue special family or single season tickets at very low rates. Parties living 8 or 10 miles from the center of the city can purchase these tickets, and the fare costs them little or no more than the city car rates.

(4) The late holders of the franchise for the city street railway did not give any of the profits to the municipality. The city corporation, in advertising for tenders for the new franchise, insists upon a large percentage of the profits. The electric and steam systems do not pay anything to the city or county for their right.

(5) The local authorities, up to the present time, have not interfered with the charges, but in the new franchise they are to regulate the rates of fare. The new rates will be adopted before the lease is given. The only compulsion the railways are under is in reference to keeping the roadways in order and a supervision as to the proper protection of the public.

(6) All the systems have returned handsome profits, especially the horse cars of the city. The city of Toronto has grown very rapidly during the

last fifteen years, and, as the city spreads over considerable ground, a large number of cars are necessary. It is anticipated that within three years there will be no horses used on the cars, as the public are insisting upon electricity.

CHARLES R. POPE,
Consul.

UNITED STATES CONSULATE,
Toronto, July 6, 1891.

MEXICO.

CITY OF MEXICO.

REPORT BY CONSUL-GENERAL GUENTHER.

The system of local transportation used in this city and suburbs is that of the horse car, although several of the suburban roads have put on steam, and a concession has been granted for a road to be run by electricity. Mules draw the cars if animal power is used. There is only one class of cars used in the city, that, of course, being first class; outside of the city, or on the suburban roads, there are two classes, first and second. Quite a large amount of freight passes over these roads from the different villages in this valley bound for the markets in this city. Special cars are reserved for the freight.

The roads are owned by corporations, the largest company here being the Federal District Railway Company, which has extended its branches into nearly all of the suburban towns, at least the most important. The municipality does not own any of these roads, the concessions for them being granted by the federal Government, but they are subject to the rules of the municipalities through which they pass.

The rates of fare charged are, viz: In the city and to all parts thereof, 6 cents, second-class cars not being used; on the suburban roads the average rate charged may be said to be 2½ cents per mile for first class, and half that charge for second class. Competition recently has had a great deal to do with the rates charged; some of the roads have had to lower them in order to make it pay.

The municipalities do not obtain from the corporations any monetary return. The two following concessions, which have been recently granted, will be of interest on this subject, showing how the roads are controlled by the federal Government, what taxes are paid, etc. They are as follows:

Concession granted to Mr. Samuel Lesem for the establishment of electrical railways in the federal district, connecting two or more of its townships. The duration of the charter is fifty years. In the first two years Mr. Lesem is to spend at least $500,000, and in the ten years following at least $4,500,-

000 in installations and track-laying. In the occupation of streets and public roads the company is to be entirely subject to the rules of the municipalities in whose jurisdiction they lie. The usual right of free importation of necessary material, with exemption from taxation, except the stamp tax, is granted for fifteen years. Not later than eighteen months after the promulgation of the concession at least one electrical station must be ready, and six months afterwards the company shall have completed at least 4 kilometers of track. The concession leaves unimpared similar rights previously granted to companies or private individuals; but, on condition that Mr. Lesem faithfully complies with the terms of his agreement, the Government binds itself not to grant another similar concession for a period of twelve years. All periods of time mentioned above date from the promulgation of the contract, except when otherwise specified. This concession passed the Senate a few weeks ago.

The other important concession has been given to Mr. Augustin Cerdan for constructing a line of railway, with its corresponding telephone or telegraph lines, which, starting from the *calzada* of Noncalco, corner of Calle Norte 4 of this capital, shall continue north, terminating with the federal district, and passing through the city of Guadalupe Hidalgo. Passenger rates are fixed not to exceed 3 cents per kilometer for each passenger in first-class cars and 1½ cents in second-class cars, but the minimum fare may be 6 cents first class and 3 cents second class. The forfeit money is $2,000 in securities of the public debt. At the end of fifty years the railway, stations, and rolling stock shall become the property of the nation at a price to be fixed by experts. The value of the rolling stock will be paid to the company out of the net profits of the line, the company receiving 6 per cent interest on whatever sum the nation may owe until payment in full is completed. The usual exemption from duties and taxes on the line and on materials for construction and operation are granted. Building must begin within four months and the line finished within one year.

The facilities afforded by the different lines are very satisfactory to the people, and are financially profitable to those engaged in the business of supplying them.

The following is the report of the Federal District Railway Company for the year 1890, showing the number of passengers carried: Suburban, first class, 1,339,410; second class, 5,818,719; urban, 7,299,074; total, 14,457,203. The gross receipts from passengers, funeral service, and freight were $1,275.000.

RICHARD GUENTHER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Mexico, June 15, 1891.

GUANAJUATO.

REPORT BY CONSUL-GENERAL GUENTHER, OF MEXICO.

The means of public transportation in the city of Guanajuato are as follows, viz: Two hacks or coaches (very little used), whose charges are regulated by the municipal authorities, the tariff being fixed at 50 cents per hour; and one line of street railway using cars moved almost exclusively by mule power. The line is owned entirely by a corporation formed for the purpose. The line is 10 kilometers in length, and is divided into five divisions of 2 kilometers each. The rate of fare is 5 cents for each division.

The municipal authorities have no monetary interest whatever in the line, nor do they receive any rents from the same.

The municipal authorities do not interfere with the working of the line in any way. The corporation is working under a concession that fixes the fare at 5 cents, as above stated, but, aside from this and a few minor regulations, the authorities do not interfere with the freedom of the company.

Cars run regularly from 5 a. m. to 10 p. m., and, as far as can be judged, the service is very satisfactory. I am informed by the manager of the company that returns are, on an average, 9 per cent per annum of the amount of capital invested.

The above will also apply to the street-car line in the city of Leon, this State, which is owned by the same company; the latter line is, however, 12 kilometers in length, and is in six divisions.

RICHARD GUENTHER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Mexico, June 15, 1891.

CENTRAL AMERICA.

NICARAGUA.

REPORT BY CONSUL NEWELL, OF MANAGUA.

The mode of public transportation in vogue in the cities of Nicaragua is by means of hacks. They are in every instance owned by individuals. Often times the drivers themselves are the owners of the hacks they drive. In Managua the rate of fare charged is 25 cents in the daytime and double that rate in the nighttime. The rate of fare for a single person for an hour is $1; two persons, $1.50; and three or four persons, $2. The rate of fare during a rain is always twice the usual charge. There is no established rule regarding the distance for the rates already quoted. The rates of fare given refer to the distance traveled from the railroad station or wharf to the hotels. Generally the ordinary limits of the city is the distance charged

for. All owners of hacks are required to pay a monthly tax of $1 to the municipality for the privilege of running them. The charges made for transportation are in no way determined by the local authorities, and they do not compel the owners of the hacks to perform any services for the right of conducting the transportation business.

In respect to the service in Managua, it is very irregular and unsatisfactory, and the public would be pleased to see the means of local transportation improved, either by the organization of better hack companies, or a system of tramways.

In Granada, the owners of hacks are required to pay a monthly tax of $1, and perform no service gratis for the municipality for the privilege of running hacks on the streets of the city. The rate of fare charged in Granada is 20 cents in the daytime and double that amount in the night or during a rain. The tariff for one hour for one person is $1, and 50 cents extra for each additional person. There are special rates from the hotels to the railroad station (30 cents), to Lake Nicaragua (50 cents), and to the cemetery (30 cents).

The rates given above are for the use of hacks within the ordinary limits of the city. There are no established rates of fare for the use of hacks outside the city. The owners of the hacks advertise that the price for the service without the city will be conventional; this, however, is always excessive.

The people of Granada, like those of Managua, would be glad to have a better or a different system of local transportation. In this particular their wishes will soon be gratified, for the municipality has granted a concession for a tramway.

All carriages destined for the use of the public are obliged to have visible their tariff; and the driver is required to give to each transient a ticket on which is impressed the number of the vehicle, the name of the owner, the board of directors, if any, and the tariff for the same. All owners of carriages are required to present their tariff to the director or governor of police, leaving a copy of the same, which shall be recorded in a book, signed by the chief of the office and the owner. The owners of carriages who contravene the previous regulation suffer a fine of $2, which goes to the benefit of the public treasury. The fine is repeated each twenty-four hours that he fails to comply with the regulations; and the person who has occupied the vehicle will not be obliged to pay more than the minimum tariff of the locality.

The owner or conductor of a carriage who receives for his services a greater price than corresponds to his tariff suffers a fine for the benefit of the exchequer equivalent to double the fare he has received, without being compelled to return to the party the excess paid.

The rates, rules, and regulations quoted are the same in Leon, Masaya, Rivas, and Chinendega, the other principal cities of Nicaragua.

WILLIAM NEWELL,

UNITED STATES CONSULATE, *Consul.*

Managua, November 15, 1891.

SOUTH AMERICA.

ARGENTINE REPUBLIC.

REPORT BY CONSUL BAKER, OF BUENOS AYRES.

(1) In Buenos Ayres and other cities of the Argentine Republic the only system of transportation is that of tram or horse cars. Neither omnibuses, electric cars, or steam cars are at all employed. Some time ago a concession was obtained for an electric system here, but the financial crisis has prevented anything being done in reference to it; also an application was made for a charter for the elevated railway system, but, owing to the very narrow streets, it was not granted. The tram or horse car system is, however, very complete, all parts of the city and the suburbs being thus closely connected and accessible. There are now seven companies, with tram tracks amounting to 271 kilometers. The report for the last month shows that there were 400 coaches and 6,009 horses in service, and a personnel of 2,948 men to manage and work them. The number of passengers transported during the month was 4,335,063, or eight times the entire population of the city.

(2) These tram or horse railways are owned by companies, who have obtained their concessions or charters from the municipal government. Nearly all of them are owned in England and their home offices and direction are there, the management here being entirely under the control of the home boards.

(3) The rates of fare charged on all these lines are fixed by the laws creating the companies. With the exception of one route, on which the fare is 5 cents, all the lines in the city proper charge 8 cents per passenger, while the lines extending to the suburbs charge from 12 to 20 cents, according to the distance. When these rates were established they represented gold; but since the suspension of specie payments and the passage of the law making the paper money of the country legal tender, the gold value of these fares has been growing less and less, according to the depreciation of the paper currency. To-day, with the gold dollar worth just $4 of paper, the actual value of the 5-cent fares is 1¼ cents gold, that of the 8-cent fare is worth 2 cents gold, and that of the 20-cent fare is worth 5 cents gold.

In view of this great depreciation of their fares, the companies have recently petitioned the municipal council for the privilege of adding 25 per cent paper currency to the present rates, and the council has passed an ordinance granting the petition, provided the several tramway companies will agree that in the future the fares on all tramways shall be regulated by the council, a stipulation which they are reluctant to consent to. If this arrangement is made, as all fractions of cents are to be counted as cents, the 5-cent fare will be advanced to 7 cents, the 8-cent fare to 10 cents, and

the 20-cent fare to 25 cents. The companies are maneuvering to get the increase without yielding the point insisted on by the city government.

(4) Besides *patente* or license taxes, the city receives from 6 to 8 per cent of the gross receipts of the companies, according to the special terms stipulated in their charters or concessions. Besides this, all companies are required to make and keep in repair that portion of the street pavements which is between the rails. They are also required to carry all letter carriers and policemen free.

(5) These charges on the companies are determined and fixed by the terms of the concession granted by the municipality.

(6) The facilities which the street tramways afford are generally quite satisfactory to the public. When the rates represented gold, the companies, owing to their immense cargo and passenger traffic, paid very large dividends; but the depreciation in their gold value since the suspension of specie payments has caused a great falling off in the net profits to be divided among the English shareholders. Still, the lines are understood to be financially profitable, though some are much more valuable franchises than the others.

E. L. BAKER,
Consul.

UNITED STATES CONSULATE,
Buenos Ayres, July 29, 1891.

BRAZIL.

REPORT BY CONSUL-GENERAL DOCKERY, OF RIO DE JANEIRO.

MODES OF CONVEYANCE.

The systems of public transportation employed in this city are numerous, and comprise, in use and under construction, all the improved methods of modern times. Those in use are mainly horse cars, public conveyances in the shape of two-horse carriages or hacks; a one-horse, two-wheeled species of gig (known here as tilbury), covered, quite comfortable, and convenient; and one line of steam cars (the Central Railway), entering well into the city, upon the line of which are situated the race tracks and other sources of amusement, and is heavily patronized. This railway belongs to the Government, and is finely managed. Three other railroads approach the city on the other shore of the bay, and transfer passengers and freight to the fine line of ferryboats, which are safe, commodious, and prompt. This line of ferryboats connects the city of Nictheroy (which is a separate corporation of some 30,000 inhabitants, and is the capital of the State of Rio de Janeiro) with this federal capital. Nictheroy, with its prosperous suburb, Domingo, is the home of many thousands of Rio de Janeiro's wealthy and intelligent business men, and has many palatial residences of great cost and imposing gardens.

The horse car and popular tilbury constitute the principal modes of local transportation in the city, with two lines of railway penetrating the interior and placing in easy reach of its inhabitants several delightful and growing summer resorts of pure air and fine water. The various ferryboats are thronged each morning and evening with vast crowds going and returning from their respective places of business.

There are likewise in Rio de Janeiro two inclined railroads. The chief one is propelled by steam, and after a very precipitous and serpentine route of some 2½ miles reaches the summit of Corcobado, at an altitude of some 2,360 feet above the city. The view is imposing, and the spot is much frequented. A first-class hotel (for this country) occupies a picturesque position near the summit. The other is a cable road, and ascends the range of mountains known as Santa Theresa. On this elevation there are many hotels of celebrity and resort, all of which are in direct and speedy communication by rail and horse-car connection with every portion of the city.

The modes under construction include several electric-car lines and one or more elevated railroads. Some time, however, must elapse before these projected schemes are ready for use.

OWNERSHIP.

Originally the roads were owned by the municipality, which has, for a stipulated sum and fixed number of years, granted the privilege to individuals or companies, as deemed proper. Capitalists are eager for these concessions, and much rivalry exists among them, which enables the municipality to realize enormous sums for these exclusive grants. This is more fully explained below.

RATES OF FARE.

The rates are governed by distance, and range from 50 to 400 reis (2½ to 20 cents), and also according to the class of car.

The municipality obtains very heavy monetary returns.

The rates of fare are controlled alone by the companies, but they are compelled to transport policemen, members of fire companies, etc., gratuitously.

FACILITIES OF TRANSPORTATION.

The only complaint heard is that there are not enough cars. The enterprise is admittedly very remunerative to the companies.

MISCELLANEOUS STATISTICS.

I give below a somewhat detailed statement of the character, extent, cost, and mode of operating the horse cars of this city.

There are four leading lines of horse cars (called "bonds"), each of which is under a separate organization. These main trunk lines have many branches, and penetrate every nook and corner of this widely extended city to the very suburbs thereof. In extent of track the computation reaches about 100 miles. These cars are drawn entirely by light mules, bought generally in

the Argentine Republic, and make fine speed and run with great regularity. The narrow streets, generally thronged with other conveyances, necessitate the attention of a watchman at each crossing, which avoids collision and mishaps. All the first-class cars are open on each side, with curtains to exclude sun and rain. A step or plank, securely fastened, runs some 18 inches below the floor of the car on each side. The passenger enters on the side, and selects his seat before entering. The conductor, in collecting fares and in the discharge of his other duties, walks around on the plank on the outside, holding to the upright supports of the car. The interior of the car of the larger size has eight nicely arranged seats, running across from side to side, and four persons and no more are allowed on each seat. Unlike the United States omnibus, which has proverbially "plenty of room on the inside," this rule is uniformly enforced. Yet passengers fill each platform and stand on the sides so long as they can find standing room, until often fifty passengers are jerked along handsomely by two little mules. The cars are kept very neat, and every precaution is adopted to suit the taste of the most fastidious. The conductors are exemplars of politeness, and are especially kind to strangers. All improper persons and those not properly dressed are excluded or ordered off. A man in his shirt sleeves, bare-footed, or without a cravat is not admitted. Ugly language, or indecent, boisterous conduct is rebuked by immediate expulsion. This nicety of deportment and propriety of conduct makes this system of transportation very enjoyable to the higher class, ladies especially. Indeed, walking here is "out of style," and the pedestrian is regarded as boorish and uncultivated. This riding propensity is not, however, confined to the better class. The inferior class of cars are likewise crowded. The laborer, en route to or from his work; the market woman, with a few pennies; the beggar, even, between begging stations—all ride, and look with surprise on the footman as he plods along.

The cars, in view of this custom, run continuously twenty-two out of twenty-four hours, and are continually increasing their carrying capacity.

In addition to the three classes of passenger cars, on which not even a satchel is allowed, there are baggage cars especially fitted for that business, on which passengers are not allowed. These likewise run with great regularity and are a great convenience.

This system, for efficiency, thoroughness, and popular approval, is not surpassed in many cities elsewhere which claim higher proficiency in many other respects.

The Jardin Botanico is perhaps the most valuable of the four lines, and is 52 kilometers (about 35 miles) in length. About one year ago this concession expired by limitation, and the privilege was renewed for forty years on the payment in advance of 1,500,000 milreis and an annual payment for each year of 150,000 milreis, the milreis at par value in United States currency being 54.6 cents. At the expiration of this period of forty years it reverts to the municipality. The receipts for last year were 1,932,714 milreis; expenses, 869,101 milreis; profits, 1,036,613 milreis. The number of

passengers in 1890–'91 was 12,807,278; in 1889–'90, 10,542,731; increase, 2,264,547.

The division of class passengers was as follows:

Description.	1889–'90.	1890–'91.
	Number.	*Number.*
100 reis	5,466,948	7,526,237
200 reis	4,849,470	4,991,749
250 reis	158,400	311,120
300 reis	67,913	208,830

The extension of line in 1889–'90 was 41,692 meters; in 1890–'91, 52,288 meters; increase, 9,404 meters. The number of meters run in 1890–'91 was 3,321,887,227. The monthly expense per kilometer in 1889–'90 was 67 milreis; in 1890–'91, 39 milreis. The rolling stock was as follows: In 1889–'90, 67 open cars, 8 closed cars, and 15 second-class cars; in 1890–'91, 83 open cars, 8 closed cars, and 14 second-class cars. The number of mules in 1890–'91 was 1,339, costing 193,173 milreis. The cost of food in 1889–'90 was 207,272 milreis; in 1890–'91, 236,933 milreis. The cost of each mule per day was 761 reis.

The receipts of the S. Christevao in 1890–'91 were 1,988,064 milreis; expenses, 1,147,183 milreis; balance, 840,881 milreis.

The receipts of the Villa Gabel in 1890–'91 were 664,471 milreis; expenses, 419,277 milreis.

The receipts of the Carris Urbanos were 2,028,585 milreis; expenses, 533,366 milreis.

The above figures demonstrate the magnitude of this business and indicate unmistakably popular satisfaction therewith.

O. H. DOCKERY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rio de Janeiro, September 16, 1891.

PERU.

REPORT BY CONSUL DAUGHERTY, OF CALLAO.

The systems of public transportation employed in Lima and Callao are carriages and horse cars. There are no omnibuses or electric cars. Communication between these cities, which are 7 to 8 miles apart, is principally by steam. There are two lines, one called the American and the other the English. Fare by either line is 40 centavos* each way first class and 20 centavos second class. Communication between Lima and Chorillos, a popular watering place a few miles from Lima, as well as between Mira Flores and Lima, is by steam, and the fare to and from each place is 40 centavos first class and 20 centavos second class.

* 1 sol of 100 centavos=85 cents.

The carriages used in the cities of Lima and Callao are heavy, cumbersome affairs of antiquated pattern. The horses are generally poor in quality and in flesh, and are mercilessly driven and handled by the drivers. The fare from the depots to any part of either city is 30 centavos.

In the city of Arequipa there is a horse railway, but no carriages. It is said that the dry atmosphere during the summer season and the roughly bowldered streets soon work the destruction of the most stoutly constructed vehicles.

The street railways of Lima are owned by the Lima Tramway Company. The fare is 10 centavos to any part of the city. Some of the coaches have seats on the top, and the fare above is 5 centavos. If the fares were advanced, it is claimed that the municipality would soon take measures to increase the taxes on the roads.

The street railways of Lima have a contract with the city for thirty-three years, and but thirteen years have elapsed since the contract was made; it has, therefore, twenty years yet to run. After thirty-three years the municipality has a right to take the roads, with an allowance to the company of 25 per cent on the investment. An obligation on the roads, however, is pending to build 3 miles of additional road. I am assured that it would be an easy matter to get hold of the business, and get the terms of the contract with the city modified.

The taxes assessed for the use of the franchise are as follows:

	Sols.
Pension for each six months	9,300
For repairs (7 sols per block for 115 blocks operated, paid every six months)	805
Total	10,105
Allowance	63
Net taxes	10,042

The total tax per year is 20,084 sols. In addition to this, the railways pay to the city for the use of a large block formerly used as a market place the sum of 200 sols (silver) per month.

The street railway from Callao to what is called "the Point," a very pretty watering place 2 miles distant, is owned by the Beneficencia, a public charity supported by weekly lottery drawings, which take place on the Plazuela Matrice every Saturday afternoon. The tickets are hawked about the streets from early dawn till night, and all classes of citizens, native and foreign, purchase them. This little road is run by private parties on contract, but I think it is hardly a source of any great revenue. The fare is 10 centavos each way. All the steam connections spoken of are in the hands of the Peruvian Corporation (limited), of London.

The local authorities leave the fixing of fares to the roads, but any advance in rates would, it is claimed, be resented by the general and municipal authorities. The municipal officers are carried by the street railways free of charge.

There is a strong movement in Lima to secure a uniform fare of 5 centavos for all seats. It is not improbable that a lower rate of fare will be tried as a voluntary experiment by the companies, the claim being made that such a rate of 5 centavos would so increase travel as to prove more profitable to the owners. There is a great aversion among the higher classes to being compelled to ride on the same seats or in the same cars with the working classes, and it is believed that two classes of cars will be used in deference to this feeling.

The roads seem to render good service. It is impossible to obtain reliable figures as to earnings and profits. It is generally conceded, however, that the street railways are fairly profitable as now conducted, and under present taxes.

A. J. DAUGHERTY,
Consul.

UNITED STATES CONSULATE,
Callao, June 30, 1891.

REPUBLIC OF COLOMBIA.

REPORT BY CONSUL-GENERAL ADAMSON, OF PANAMA.

The public transportation of the city of Panama is performed solely by vehicles of the cabriolet type, known in local parlance as "coaches." These coaches are owned by individuals. They have, in a general way, the appearance of being past their prime.

The horse or mule that draws a coach is a much-abused animal, and the harness he wears is a curiously ill-fitting one, with generally iron chains or ropes instead of leather traces.

The rates of fare are fixed by the municipal law, and are as follows: Twenty cents for each person from any part of the town to the old station of the railway and 30 cents to the new station. As this may appear indefinite, it may be better to say that for the shortest ride that may be taken, even if only 20 yards, it would be about 12 cents in United States coin, and for a distance of a mile about 20 cents. The rate by the hour, reduced to United States coin, is, within the city limits, for one person, $1; for two persons, $1.50; for three persons, $1.65. If the passenger goes outside of the city limits, the rate by the hour for one person is $1.30; for two persons, $2; for three persons, $2.65. The municipality charges a license fee equivalent to $3.20 per month in United States coin on each public coach.

The facilities afforded appear to be satisfactory to the people, and are fairly remunerative to owners of coaches.

THOMAS ADAMSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Panama, June 11, 1891.

URUGUAY.

REPORT BY CONSUL HILL, OF MONTEVIDEO.

This city is supplied with a system of horse tram cars, with two or three horses to each car. The trams are owned by seven different private corporations, under concessions granted by the Government or municipality.

Fares are regulated according to districts, and are as follows: First fare, 4 cents gold for an average distance of 4½ kilometers; second fare, 6 cents for 5½ kilometers; third fare, 8 cents for 6½ kilometers; fourth fare, 10 cents for 9½ kilometers.

There are no municipal taxes imposed. Government taxes are assessed on the capital employed, being at the rate of $6 per $1,000 on the value of land, buildings, and rolling stock, and $6.50 per $1,000 on the balance of the whole of the capital of the company. In addition, each company pays $300 annually for a *patente*, or license.

By the terms of some of the concessions the municipality may determine the rates of transportation. In some of the earlier concessions the sole right to fix charges is reserved to the companies themselves. The companies are not compelled by the terms of their concessions or otherwise to render any gratuitous services whatever to anybody, beyond the agreement to keep the width of their lines, plus 50 centimeters on each side, in proper repair. The later concessions provide that the companies shall keep the whole of the street or road in repair.

The facilities provided by the tram lines are fairly satisfactory to the public, and, generally speaking, the business of transportation is financially profitable, the various companies paying from 6 to 9 per cent on the capital invested.

The Paso del Molino and Cerro tramway is the oldest of the lines established here. Its track is opened as follows: From Calle Cerrito to 25 de Mayo, 1,745 meters; from Calle Juncal to Paso del Molino, 12,610 meters; from Paso del Molino to the station, 800 meters; from Calle Uruguay to southern station, 3,000 meters; Calle Solis branch, 450 meters; Prado branch, 1,300 meters; Calle Gomez branch, 550 meters; Calle Capurro branch, 1,400 meters; Cerro line, 6,710 meters; Avenue General Rondeau branch, 2,660 meters; total, 31,225 meters. Track within stations: Central station, 545 meters; southern, 230 meters; Paso del Molino, 200 meters; total, 975 meters.

This company has 37 closed and 39 open cars, employing 530 horses, and 3 stations. The central station at Arroyo Seco has capacity for 390 horses and 48 cars, sufficient food and water for horses, and covers 5,642 varas. The Paso del Molino station has capacity for 120 horses and 32 cars, with carpenter, paint, and blacksmith shops, covering 18,050 varas. The southern station has capacity for 170 horses and 30 cars, and covers 3,300 varas.

Concerning the business, etc., of the company the following data may be of interest:

Table showing the operations of the Paso del Molino and Cerro Tramway from 1870 to 1889, inclusive.

Years.	Number of trips.	Distance run.	Passengers carried.	Product of passages.
		Kilometers.		
1870	17,270	116,156	352,092	$65,918.61
1871	22,503	151,352	458,613	73,539.94
1872	49,264	373,238	1,003,994	73,539.94
1873	59,396	499,520	1,425,488	151,521.96
1874	59,412	427,730	1,138,512	123,447.54
1875	57,310	411,923	939,841	123,040.72
1876	49,766	385,685	769,059	101,608.02
1877	56,848	454,267	807,193	95,927.07
1878	61,174	483,891	913,043	91,035.20
1879	78,409	554,370	1,081,751	90,433.50
1880	72,837	510,046	1,021,659	85,568.64
1881	68,280	491,855	1,024,405	84,226.86
1882	73,366	553,886	1,119,797	92,518.57
1883	86,355	634,009	1,443,281	108,272.69
1884	121,388	780,319	1,788,964	127,891.48
1885	147,781	827,528	1,852,835	130,583.32
1886	150,482	770,307	1,750,925	121,594.28
1887	160,708	825,437	1,870,260	129,908.43
1888	196,088	983,655	2,351,835	160,092.86
1889	302,591	1,386,559	3,242,515	201,899.31

Years.	General expenses.	Reserve fund.	Dividends distributed.	Annual interest.
				Per cent.
1870	$47,184.61	$2,329.42	$19,156.80	9.82
1871	48,491.56	2,775.45	24,786.70	12.07
1872	75,567.79	4,162.70	32,222.40	13.42
1873	90,268.88	7,110.80	56,500.80	23.54
1874	80,218.06	5,084.81	40,564.80	16.9
1875	91,927.03	3,568.12	28,800.00	12
1876	57,744.74	4,945.34	39,436.80	8.21
1877	55,994.75	4,838.36	34,800.00	7.25
1878	56,341.22	3,842.92	36,000.00	7.5
1879	61,350.42	3,298.02	30,000.00	6.37
1880	53,497.80	3,543.56	32,400.00	6.75
1881	50,213.22	2,813.04	34,200.00	7.12
1882	57,781.34	3,917.08	35,700.00	7.44
1883	71,349.58	4,133.38	37,200.00	7.75
1884	80,410.73	5,552.05	48,000.00	10
1885	80,141.35	5,564.25	46,000.00	10
1886	77,830.78	5,040.38	40,800.00	8.37
1887	73,947.66	5,798.69	47,400.00	9.87
1888	95,004.79	6,697.77	57,600.00	12
1889	133,320.77	7,096.76	61,200.00	8.5

The capital of the company in 1870 was $195,000; in 1872, $240,000; in 1876, $480,000; and in 1889, $720,000.

Table showing the receipts, expenses, etc., of the Paso del Molino and Cerro Tramway line from 1880 to 1889, inclusive.

Years.	Receipts.	Expenses.	Percentage of expenses.	Dividend.	Number of passengers.
			Per cent.	*Per cent.*	
1880	$86,268.14	$50,767.36	58.85	6¼	1,021,659
1881	85,429.55	47,298.99	55.37	7⅛	1,084,405
1882	93,154.44	54,683.41	58.08	7⅞	1,119,797
1883	109,526.92	68,194.03	62.26	7¾	1,443,281
1884	129,884.31	75,068.53	57.7	10	1,788,964
1885	132,772.77	79,630.15	59.97	9¾	1,852,835
1886	123,334.75	75,430.78	61.16	8⅜	1,750,925
1887	131,934.74	76,447.66	57.94	9⅜	1,870,360
1888	161,982.73	97,504.79	60.19	12	2,352,835
1889	204,288.48	135,887.10	66.51	8½	3,242,315

Years.	Distance run.	Number of cars.	Number of horses.	Average cost of maintenance of horses per month.
	Kilometers.			
1880	510,046	27	316	$5.65
1881	491,855	27	353	4.43
1882	553,886	29	335	5.39
1883	634,009	44	380	7.14
1884	780,319	44	386	6.33
1885	827,528	47	355	5.13
1886	770,307	47	316	5.39
1887	825,437	54	344	5.88
1888	983,655	70	561	6.69
1889	1,386,559	76	583	7.70

Table showing the operations of the Union and Marollas Tramway from 1885 to 1889, inclusive.

Years.	Number of trips.	Distance run.	Passengers carried.	Number of employés.	Number of cars.	Number of horses.	Number of stations.
		Kilometers.					
1885	140,885	1,485,199	3,980,120	.....	.....	.....	.....
1886	139,611	1,484,454	3,856,021	.....	.....	.....	.....
1887	143,586	1,533,493	4,169,760	.....	.....	.....	.....
1888	153,079	1,647,285	4,464,778	.....	.....	.....	.....
1889	174,083	1,786,833	4,952,155	150	82	720	2

The line is open as follows: From the Union station to the custom-house, 9,400 meters; from the village of Ituzaingi to the custom-house, 9,803 meters; Viga branch, 2,000 meters; Calle Zatala branch, 500 meters; Calle Arenal Grande, 624 meters; Calle Republica, 200 meters. Double track: Calle 18 de Julio (18th of July) and 8th of October, 4,000 meters; Calle Cerro Largo, Florida, and General Flores, 957 meters; curve in the Viga branch, 29 meters; from Calle Savalleja to Ramirez, 1,355 meters; six side tracks, 420 meters; extension of track and thirty-five side tracks, etc., 3,225 meters; track within stations, 1,162 meters; total, 33,675 meters.

Table showing the operations of the Eastern Tramway from 1885 to 1889, inclusive.

Years.	Number of trips.	Distance run.	Passengers carried.	Number of employés.	Number of cars.	Number of horses.	Number of stations.
		Kilometers.					
1885-'86	87,155	601,946	1,934,461	.....	.....	.....	.....
1886 (May 1 to December 31)	47,437	394,134	1,122,955	.....	.....	.....	.....
1887	86,387	604,482	1,814,841	.....	.....	.....	.....
1888	151,365	765,226	2,493,686	.....	.....	.....	.....
1889	86,387	604,482	2,381,379	88	50	300	2

Table showing the operations of the Oriental Tramway from 1887 to 1889, inclusive.

Years.	Number of trips.	Distance run.	Passengers carried.	Number of employés.	Number of cars.	Number of horses.	Number of stations.
		Kilometers.					
1887	55,980	561,483	2,439,052	147	56	569	3
1888	97,386	2,182,766	3,961,760	200	82	804	3
1889	188,100	4,132,250	4,351,094	200	83	899	3

The extension of the line is as follows: From the custom-house to the orphan asylum and Playa Ramirez, 5½ kilometers; from corner of Calle Andes and Maldonado to the Sarrañaga road, 6½ kilometers; from Calle Reconquista to corner of Calle Gurani and 25 de Mayo, 1 kilometer; total, 13 kilometers. Central line: From the custom-house to station in Goes road, 8½ kilometers; from corner Ejido and San José to Magallanes, 1 kilometer; total, 9½ kilometers, making a total extension of 22½ kilometers. There is also in process of construction a branch from Calle Justicia to Guaviyú, a distance of 1 kilometer.

Table showing the operations of the Reducto Tramway in 1889.

Details.	Number.	Details.	Number.
Trips	75,100	Employés	94
Kilometers run	1,095,976	Horses	500
Passengers	2,481,406	Stations	1
Cars	54		

The line has 27,633 meters in extension.

Table showing the operations of the Northern Tramway in 1889.

Details.	Number.	Details.	Number.
Trips	37,001	Employés	110
Kilometers run	965,578	Horses	440
Passengers	1,596,985	Stations	2
Cars	42		

The line is 17,190 meters in length.

Table showing the operations of the Pocitos, Buceo, and Union Tramway in 1889.

Details.	Number.	Details.	Number.
Trips	55,629	Employés	118
Kilometers run	578,584	Horses	448
Passengers	1,114,005	Stations	1
Cars	49		

The line runs as follows: From Plaza Independencia to Pocitos, 6,350 meters; from station to Union, 6,796 meters. This company has a funeral service for the Buceo cemetery, and it owns the baths and other properties at Pocitos.

Since 1889 two new lines—the Montevideana and Uruguayo—have been opened, but as yet there is no statement of either given to the public.

Table giving a résumé of the operations of the tramways of Montevideo in 1889.

Tramways.	Trips.	Distance run.	Passengers carried.	Employés.	Cars.	Horses.	Stations.
	No.	*Kilometers.*	*No.*	*No.*	*No.*	*No.*	*No.*
Paso del Molino and Cerro	302,591	1,386,559	3,242,515	241	76	583	3
Union and Marofias	174,083	1,786,833	4,952,155	150	82	720	2
Eastern	86,387	604,482	2,381,379	88	50	300	2
Reducto	75,100	1,095,976	2,481,406	94	54	500	1
Northern	37,001	965,578	1,596,985	110	42	440	1
Oriental	188,100	4,132,250	4,351,094	200	83	899	3
Pocitos, Buceo, and Union	55,629	578,584	1,114,005	118	49	448	1
Total	918,891	10,550,262	20,119,539	1,001	436	3,890	13

FRANK D. HILL,
Consul.

UNITED STATES CONSULATE,
Montevideo, September 23, 1891.

VENEZUELA.

REPORT BY CONSUL PLUMACHER, OF MARACAIBO.

(1) In the city of Maracaibo, but at no other point in this consular district, there are in operation two lines of horse tramways, one of which is divided into two sections, each about 2½ miles in length; the other line has an extension of about 1½ miles.

A third tramway (steam) is in course of rapid construction, and should soon be open for traffic. All of these lines run through the city to the suburbs, and the last mentioned, when completed, will extend beyond the city limits for a little more than 3 miles to a point called the "Hoyada."

(2) All the lines are owned by corporations, the municipality taking no part whatever in the enterprises.

(3) The fare is a uniform rate of 5 cents, irrespective of distance.

(4) The municipality receives no fee or any return whatever from the corporations; neither is there any tax or license fee.

(5) The transportation charges are determined by the corporations themselves, the municipality abstaining from any intervention in the matter, nor does it make any special service compulsory.

(6) The facilities afforded are fairly satisfactory, although on public holidays and at certain hours on working days there is an inconvenient scarcity of car room on the first-mentioned line, whose two sections extend from the center of the city to the north and south suburbs, respectively.

The financial results of this line, which was the first constructed at Maracaibo, have also been excellent, dividends of 3 per cent per month having been declared, and never less than 2 per cent. The last-mentioned line gives as yet but little profit, but there is no doubt of its eventual success, as will also be the case with the steam tramway in construction.

E. PLUMACHER,
Consul.

UNITED STATES CONSULATE,
Maracaibo, June 1, 1891.

BRITISH WEST INDIES.

JAMAICA.

REPORT BY CONSUL ESTES, OF KINGSTON.

Kingston, a city of nearly 50,000 inhabitants, is the only city or town of any importance in this consular district. It has a system of tram cars, with about 12 miles of track and fifteen cars, which are drawn by mules.

The plant is owned by a corporation, with a capital stock of £28,000 (about $140,000).

The rates of fare are controlled as to distance by the various lines, being divided into stations of about 1 mile. Tickets can be purchased at the office or at various agencies in the city for 2*d.* (4 cents) each, good for a ride between stations, an extra ticket being collected by the conductor after passing each station. If a passenger has not purchased tickets before entering the car and pays his fare in cash, he is charged 3*d.* (6 cents). Thus, on a single line 6 miles in length, tickets are collected six times, and if the passenger has tickets it costs him 1*s.* (24 cents); if he has not tickets, but pays cash, it costs him 1*s.* 6*d.* (36 cents).

The municipality receives no return for the franchise granted the street-car company. On the contrary, the company was granted immunity from taxation for a period of twenty years. This, I believe, expires in 1897. Neither has the municipality or colonial government any control over rates of fare charged, nor do they compel the company to perform services which they would not undertake otherwise.

Last year the company paid a dividend of 10 per cent on £28,000, transferred £600 to the reserve fund, £2,000 to the renewal account, and carried £196 13*s.* 6*d.* over to next year's account. In their trial balance, before the above dividend was declared, they mention among their assets "reserve account, £375; renewal account, £529 2*s.* 3*d.*"

The service is fairly satisfactory to the public.

There are about one hundred and fifty omnibuses or hackney carriages plying for business in Kingston, which are owned by individuals and companies. Their rates of fare are regulated by the municipal council, and are 6*d.* (12 cents) for any place within certain limits mentioned, being about 1 mile square in the main part of the city; and for every half mile or fraction thereof beyond the boundaries as above, 6*d.* (12 cents) additional is charged. When engaged by the hour, the charge is 3*s.* per hour (72 cents), and at that rate for fractional parts of an hour of not less than twenty minutes. The carriages are usually two-seated buggies drawn by one horse, and are fairly comfortable and satisfactory.

W. R. ESTES,
Consul.

UNITED STATES CONSULATE,
Kingston, August 14, 1891.

SPANISH WEST INDIES.

SANTIAGO DE CUBA.

REPORT BY CONSUL REIMER.

The three principal cities of this consular district can not boast of any innovation in the manner of public transportation. It is true that the "quitrin" (so much in favor with the Cuban planter), a vehicle of two large wheels, long shafts, and its body resting between the horse and the axle on leather straps, and besides the horse in the shafts another horse with rider, is fast going out of use on account of its cost, and two-horse landaus and other species of light carriages are taking its place. These carriages convey passengers from place to place within the city limits for 20 cents (gold) a head. They pay a tax of $10 per annum to the municipality, and are all owned by individuals. Owing to the very bad condition of the streets and the city's many hills, they are much patronized.

For conveying freight from one place to the other in the cities, carts, much on the principle of the quitrin, are used. The wheels are smaller and the shafts rest on a species of saddle on the horse or mule. On a network of rope and wire between the animal and axle the freight is placed. Six hundred pounds are carried for 20 cents from one point to another. These carts have been in use from time immemorial, and are a peculiar institution of this province.

The horses and mules are all small and can not haul, but carry all weights on their backs. For conveying sugar and products to railroads or the seaboard ox carts are used. The oxen carry the yoke fastened to the horns. On trails pack mules are used. They carry 200 pounds 30 miles per day. In the rainy season cart roads are impassable, and hauling over them is entirely suspended.

Want of capital, and, no doubt, also, the topographical condition of this consular district, and the consequent great expense connected with the construction of railroads, has much to do with the fact that few exist. Guantanamo, Santiago de Cuba, Manzanillo, and Santa Cruz are connected only by lines of steamers leaving here weekly and semiweekly. It seems almost incredible that only 69 kilometers of public railroads are to be found in this consular district, and this notwithstanding the fact that nearly $6,000,000 worth of products were exported to the the United States alone during the last fiscal year.

The Sabanilla and Marole Railroad, a line running in a northerly direction from this city 33 kilometers to a point called Ensamadas, charges fares for the 33 kilometers as follows: First class, $1.15 and 10 cents Government tax; second class, $1 and 5 cents Government tax; third class, 60 cents and 5 cents Government tax. Freights are as follows: Live stock, 6 cents per kilometer; merchandise, per 1,000 kilograms, 40 cents per kilometer; sugar, per 1,000 kilograms, 30 cents per kilometer.

The Guantanamo Railroad, a road 36 kilometers in length, running from Caimanera, the port of Guantanamo, to the town proper, thence a branch to the village of Jamaica and another to the sugar estate of Soledad, charges for freights as follows: From Caimanera to Guantanamo, 2½ cents per kilometer for 100 pounds, and above Guantanamo 2½ cents for a like amount and distance for sugar and general merchandise. Passengers pay from Caimanera to Guantanamo, 24 kilometers, first class, $1 and 10 cents Government tax; second class, 50 cents and 5 cents Government tax. The roadbed and rolling stock of this railroad are in better condition than the Sabanilla and Marole Railroad, and it paid a dividend of 6 per cent last year on its stock.

Railroads are free from municipal taxes, but pay to the Government, in addition to the head tax for passengers, 3 per cent on the freight collected and 6 per cent on their dividend; that is to say, the amount of dividend distributed.

A country so rich in mineral wealth and whose possibilities for further agricultural development are so favorable, needs only railroads to further its industries. Unfortunately, the various lines of coastwise steamers, fearing a falling off of their business, have prevented, it seems, all attempts to construct railroads in the interior of this island.

OTTO E. REIMER,

UNITED STATES CONSULATE, *Consul.*

Santiago de Cuba, July 31, 1891.

CONTINENT OF ASIA.

ASIATIC TURKEY.

SYRIA.

REPORT BY CONSUL BISSINGER, OF BEIRUT.

Intelligence has reached this city from Constantinople that the sanction of the Imperial Ottoman Government has been secured by a prominent citizen of Beirut for the construction and operation of a steam tramway between that city and Damascus. There is great rejoicing in both cities over this long-delayed and much-wished-for rapid transit between these two important points, as it will doubtless greatly stimulate their commercial intercourse and open to cultivation large tracts of land now lying waste. This is all the more probable as the building of the steam tramway extending from Damascus into the rich agricultural region known as the Haooran is being rapidly pushed forward, thus affording rapid and comparatively cheap transportation facilities between the interior and the coast, the want of which has made the profitable cultivation of the magnificent quality of the Haooran wheat and other products of this fertile district impossible in the past.

The proposed new steam route from Beirut to Damascus, a distance of about 70 miles, will present many engineering difficulties and prove a very costly enterprise, as it has to traverse both the Lebanon and Anti-Lebanon ranges of mountains, which formed the main obstacle to the realization of the long-cherished scheme of a regular railway connecting the two cities.

The company is to be formed immediately, and will be composed largely of the shareholders of the Beirut port, work on which is progressing as fast as circumstances permit.

There are more projects for steam tramways, railroads, and other important improvements in Syria, which will form the subject of special reports in due time.

ERHARD BISSINGER,
Consul.

UNITED STATES CONSULATE,
Beirut, June 10, 1891.

BRITISH ASIA.

CALCUTTA.

REPORT BY CONSUL-GENERAL MERRILL.

Urban and suburban transportation is carried on in Calcutta by means of tramway cars, hackney carriages, and palanquins, there being no public omnibuses. The cars are drawn by single horses on the light roads, by a pair of horses where the traffic is heavier, and across the "maidan," or public park, by steam locomotives fired with coke and condensing their steam. No electric cars are in use at present.

The number of tramway cars carrying twenty passengers each is 45; the number carrying forty passengers each is 130, and additions to this number are in course of construction. The number of first-class hackney carriages, according to the municipal return, is 89; second class, 1,554; and third class, 1,958; palanquins, 395. The number of tramway cars is steadily increasing. Hackney carriages do not materially increase in number, while palanquins are fast dying out.

The rates of fare in hackney carriages are: First-class carriages, 4 rupees and upwards a day, according to agreement; second class, 3 rupees a day, and, by the hour, 12 annas for the first hour and 6 annas for the next hour; third class, 1½ rupees a day, and, by the hour, 6 annas for the first hour and 3 annas for the next hour. The rate for palanquins is the same as that of the third-class carriages.

The tramway cars are owned by an English joint-stock company, and the hackney carriages and palanquins by private owners, principally natives.

The rates of fare in tramway cars are nearly all 4 pice (about 2 cents); there are higher fares—6, 8, and 10 pice—but these are rarely used, especially the two latter. The maximum distance for the 4-pice fare is a little over 3 miles. The rates are not controlled by distance; they are regulated by the tramway company, and are influenced by public convenience, hackney carriage competition, and other circumstances.

The municipality exacts from the tramway company as an equivalent for the franchise an annual rental for urban lines of 3,000 rupees (about $1,000) per mile of double lines and 2,000 rupees per mile of single lines. Suburban rates are 1,000 rupees per mile of road. As the lines are all double, with the exception of that across the "maidan," this rental amounts to about 1,000 rupees per week. Under the franchise the right of constructing any proposed tramway must first be offered to the existing company at the same rental rates as above.

The right of purchase becomes vested in the municipality once in seven years, and the terms of purchase are specified as 40 per cent premium on the then existing capital.

The maximum rate of fare is limited by the act under which the lines are constructed to 3 annas (about 6 cents) for 3 miles. There is no mini-

mum rate and no further power of control over the company, which fixes its own charges, which are about one-third of the authorized maximum.

There is no compulsion on the company to perform services which they would not otherwise undertake.

The satisfaction of the public with the facilities offered by the tramway company may be gathered from the fact that the number of passengers increased from 6,477,659 in the year 1885 to 11,316,443 in the year 1890.

The results are not financially profitable to the shareholders of the company. The average dividend during the past seven years has been less than 2 per cent per annum.

I am greatly indebted to John R. Maples, esq., managing agent of the Calcutta Tramways Company, for information.

SAMUEL MERRILL,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Calcutta, July 11, 1891.

HONGKONG.

REPORT BY CONSUL SIMONS.

(1) The systems of public transportation employed in Hongkong for urban and suburban travel comprise: (*a*) The Hongkong High Level Tramway, or "peak" tramway, a succinct account of which follows; (*b*) an omnibus system running more or less irregularly from the lower terminus of the peak tramway along the Queen's road and the water front; (*c*) five hundred jinricshas, a species of small two-wheeled chaise, drawn by one man and sometimes pushed by one or two more, and originally imported from Japan; and (*d*) about seven hundred sedan chairs, each borne on the shoulders of two, three, or four men.

(2) The peak tramway is owned by a corporation, and the other systems of public transportation by individuals.

(3) The rates of fare charged by the peak tramway company are as follows for first class: One adult or two children under 12, 30 cents up and 15 cents down, and for one child under 12, 15 cents up and 10 cents down. For second class they are: One adult or two children under 12, 20 cents up and 10 cents down; one child under 12, 10 cents up and 5 cents down. For third class the fares are: One passenger, 10 cents up and 5 cents down. Personal baggage over 1 cubic foot in bulk and under 3 cubic feet, 10 cents up. After 8 p. m. all fares are 30 cents. The rates for special cars are as follows: From 10 a. m. to 10 p. m., $5 each; from 10 p. m. to 11 p. m., $5 each in addition to the ordinary fares; after 11 p. m., by special agreement.

The rates of fare charged by jinricshas and chairs will be seen in the inclosed list. The rates of fare charged on the omnibuses are based on the jinricshas and chairs, and are nearly the same. All these fares are regulated either by distance or time, except in the case of the peak tramway,

which charges the same rate to intermediate stations as from one terminus to the other.

The following are the regulations for the government of public conveyances:

(1) Licenses for public vehicles shall be issued by the captain superintendent of police, who may, in his discretion, refuse to issue any license. Not more than five hundred licenses for jinricshas shall be current at any one time. Every license shall be taken out half-yearly or for the residue of the current half year, and shall expire on the 31st of May or on the 30th of November, and the holder thereof shall be subject to the following rules:

(2) The following fees for licenses shall be paid: For every wheeled vehicle, $18; for every chair, $1; for every driver or bearer of a vehicle, 30 cents.

(3) No license shall be transferable.

(4) No holder of a license for a vehicle shall let out his vehicle to any bearer or driver not being the holder of a lawful license as bearer or driver.

(5) Every licensed vehicle shall have thereto affixed, or painted thereon in such conspicuous places as the captain superintendent of police directs, the number of its license in figures not less than 2 inches in length.

(6) No jinricsha licensed for the first time after the publication of these rules shall exceed 36 inches in breadth between the wheels, or shall have tires to such wheels of less breadth than 1¼ inches. Such tires must be flat, not beveled, and the hood of such jinricsha must afford a clear height from the upper side of the cushion of 41 inches.

(7) The driver or bearer of every licensed vehicle shall wear conspicuously a distinguishing badge bearing the number of his own license. Should such badge be made of leather or metal, or of both, the captain superintendent of police may demand a deposit of 25 cents for each badge, such deposit to be returned to the owner on the expiration of his license and the return of the badge.

(8) For each jinricsha there shall be two licensed drivers, who need not, however, both be in charge of the vehicle at the same time.

(9) Each licensed driver, or bearer of a vehicle shall be photographed, free of cost to himself; one copy of such photograph shall be attached to his license, and one shall be retained by the captain superintendent of police.

(10) The licensee of every vehicle shall attend with his vehicle at such times and places as may be directed by the captain superintendent of police for the inspection of such vehicle, and shall not leave such place of inspection until authorized to do so by the captain superintendent of police.

(11) The captain superintendent of police may require the licensee of any vehicle to provide, and attach to such vehicle in such manner and in such place as the captain superintendent of police may direct, a list of the authorized fares for such vehicle, of such material and pattern as the captain superintendent of police may direct.

(12) The captain superintendent of police may refuse a license in respect of any vehicle which, in his opinion, is not, as to repairs or cleanliness, in a state fit for public use, or for any misconduct on the part of the owner, or driver, or bearer. If a license has been granted he may, for either of the above-mentioned reasons, withdraw the same and cause it to be forfeited.

(13) The captain superintendent of police may refuse a license in respect of any driver or bearer who, in his opinion, is improperly clothed. If a license has been granted he may, in such case, withdraw the same and cause it to be forfeited.

(14) Every person obtaining a license for a vehicle shall give, upon receiving his license, security in the sum of $50 by the bond of himself and of some person or persons to the satisfaction of the captain superintendent of police for the appearance at any time of the licensee and also of the driver or bearers of the vehicle when they shall respectively be thereunto required, and for his duly paying all fines which shall be imposed in respect of the vehicle or the driver or bearer thereof, and all damages which may be recovered for injuries committed

in respect of the vehicle or by the driver or bearer thereof; the bond to be in such form as the captain superintendent of police shall require.

(15) The fares to be charged for public vehicles shall be such sums as the captain superintendent of police shall, by a table of fares to be set up in some conspicuous place in his office, from time to time direct, and a copy thereof shall be inserted in every license to be granted under these rules, and it shall be also affixed in a conspicuous place on every such vehicle. Such table of fares, or any alteration of the same, shall, before the same shall come into operation, be approved by the governor in council.

(16) The driver or bearer of a licensed vehicle shall not, without reasonable cause, refuse, when unemployed, to accept hire.

(17) The driver or bearer of a licensed vehicle shall not demand more than the authorized fare for the hire of his vehicle.

(18) The driver or bearer of a licensed vehicle shall travel with reasonable speed.

(19) The driver or bearer of a licensed vehicle shall not have his fare before the completion of the engagement of such fare.

(20) The driver or bearer of a licensed vehicle shall not use insulting language or behave rudely.

(21) The driver or bearer of a licensed vehicle shall not sit or lie in or in any way occupy his own vehicle.

(22) Every licensed vehicle, when plying for hire or engaged after 8 o'clock at night, shall carry a lamp of such description as the captain superintendent of police shall direct.

(23) All property left in any vehicle shall be taken forthwith to the central police station and handed over to the police authorities, who shall cause the goods to be publicly advertised in the usual manner, and, if claimed, the same shall be handed over to the owner claiming it, subject to a deduction of 5 per cent on the value (to be given to the driver bringing the same to the police), to be ascertained in case of difference by the captain superintendent of police; and if the same shall be unclaimed at the expiration of three months from the date of the loss, the captain superintendent shall, as soon thereafter as conveniently may be, cause the said goods to be sold in such manner as he shall think best, and the captain superintendent shall deduct out of the proceeds of each sale a sum equivalent to 10 per cent on the proceeds of the sale of such goods, and shall pay the amount to the driver or bearer who shall have brought the said goods, and subject thereto the said proceeds shall be paid into the treasury.

(24) The persistent solicitation of passengers is strictly forbidden, as is also obstruction to the free transit of passengers, especially at hotels or the wharves or other landing places.

(25) No licensed owner, bearer, drawer, or driver of a licensed vehicle shall use his vehicle for the carriage of animals, merchandise, or goods other than personal baggage.

(26) No licensed owner, bearer, drawer, or driver of a licensed vehicle shall knowingly permit his vehicle to be used for the conveyance of any person suffering from a dangerously infectious disease; and for the purpose of this condition knowledge shall be presumed unless disproved by such owner, bearer, drawer, or driver.

(27) The licensed owner, bearer, drawer, or driver of any licensed vehicle that may have been used for the conveyance of any person suffering from a dangerously infectious disease shall cause such vehicle to be thoroughly disinfected to the satisfaction of the captain superintendent of police before it is again offered for hire.

(28) No licensed owner, bearer, drawer, or driver of a licensed vehicle shall allow his vehicle to be used for the conveyance of a corpse.

ARATHOON SETH,
Clerk of Councils.

COUNCIL CHAMBER, *Hongkong.*

The fees for public vehicles are as follows:

Chairs.—In Victoria, with two bearers: Half hour, 10 cents; one hour, 20 cents; three hours, 50 cents; six hours, 70 cents; by the day (6 a. m. to 6 p. m.), $1, and if the trip is extended beyond Victoria, half fare extra. Beyond Victoria, with four bearers: For one hour, 60 cents; three hours, $1; six hours, $1.50; day (6 a. m. to 6 p. m.), $2.

Jinricshas.—With single driver: Quarter hour, 5 cents; half hour, 10 cents; hour, 15 cents; every subsequent hour, 10 cents.

Victoria extends from Mount Davis to Causeway Bay and up to the level of Robinson road. If the vehicle is discharged beyond these limits, half fare extra is to be allowed for the return journey. Extra bearers or drivers and extra hours to be paid proportionate sums.

(4) The peak tramway company pays the municipality the ordinary taxes on its land and buildings, viz, police and water rates, etc.; also fees for four squatter licenses for the stations built on government ground. The proprietors of the omnibus line make no monetary return to the municipality, except that, as individuals, they pay the regular taxes on their buildings and the tax for wheeled vehicles of $18 a year for each omnibus.

(5) The charges for transportation are in all these cases determined by the local authorities, as follows: In the case of the peak tramway, by the colonial government, in the tramway ordinance of 1883; in the case of other public vehicles, by the licensing consolidation ordinance of 1887.

The only service which the colonial government compels the peak tramway company to perform is a yearly test of the rolling stock and machinery.

(6) On the whole, the facilities afforded appear to be quite satisfactory to the public, and, as to the financial profits of those engaged in the business of supplying them, I am informed that the peak tramway would have been very fairly profitable had it not been for a disastrous landslip in May, 1889, which entailed serious losses on the company; and the fact that the full number of five hundred jinricsha licenses is always applied for, notwithstanding the increase of the license fee from $6 to $18, is prima facie evidence that the jinricsha business is a paying one.

It is impossible to obtain exact statistics as to the profits of the sedan-chair owners, but they usually state that they make a fair living.

In conclusion, I would say that I am indebted for much of the information embodied in this report to the courtesy of the general managers of the peak tramway company, to the proprietors of the omnibus line, and to the police authorities of this city.

O. H. SIMONS,
Consul.

UNITED STATES CONSULATE,
Hongkong, July 17, 1891.

SINGAPORE.

REPORT BY CONSUL WILDMAN.

There is but one line of public carriage in the city of Singapore, viz, a steam tramway 6 miles long, running from one end of the city to the other along the river front. The engine used is of the dummy description. The freight cars are simply small, open, iron, flat cars, and the passenger coaches are double-decked, or two stories high. The line is owned and controlled by a corporation, and the fare is 6 cents for 6 miles.

There are no taxes, except a nominal one known as an engineer license. The local authorities exercise no control over the fees for transportation.

As to whether the facilities afforded are satisfactory to the people and whether the road is financially profitable I can only say that to the class of people who use it, viz, the merchants who use it for drayage and the Chinese coolies and poor Malays who are its passengers, it is satisfactory. It pays no dividend, although it does pay expenses, because it can not compete as a means of passenger transportation for short distances with the jinricshas, which are pulled by Chinese runners.

ROUNSEVELLE WILDMAN,
Consul.

UNITED STATES CONSULATE,
Singapore, August 10, 1891.

CHINA.

SHANGHAI.

REPORT BY CONSUL-GENERAL LEONARD.

Public transportation in Shanghai is carried on by means of man and horse power. Horses are used only for the transportation of passengers. There are no horse cars or omnibuses.

Passengers and merchandise are transported in jinricshas and on wheelbarrows of peculiar construction.

A great deal of merchandise is carried by natives, who, by the use of bamboos 6 or 7 feet long, from which they suspend their load, manage to lift and carry great weights.

During the year ended December 31, 1890, the municipal council for the English and American settlements collected the following license fees:

Vehicles.	Fees collected.	Rate per month.*
	Taels.†	
Jinricshas	34,359.80	$1.50
Wheelbarrows	6,874.75	(‡)
Hand carts	2,916.49	1.50
Livery stables	9,919.41	$1.00 to 6.00
Cargo boats	6,490.60	1.50 to 4.50
Sampans	1,307.48	.50

* Mexican currency. † 1 Shanghai tael = $1.10. ‡ 400 cash.

In the French settlement, for the same period, the following amounts were collected: Jinricshas, 24,310 taels; wheelbarrows, 4,496.69 taels; livery stables, 1,902.54 taels; sampans and cargo boats, 4,202.74 taels.

The rates for transportation are not fixed, but are very low.

The wages of coolies engaged in such employment do not average more than 30 cents a day.

J. A. LEONARD,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Shanghai, August 18, 1891.

JAPAN.

REPORT BY CONSUL-GENERAL TILLOTSON, OF KANAGAWA.

Local transportation facilities in Yokohama and vicinity are of a crude nature, consisting chiefly of the jinricsha, a small two-wheeled cart capable of accommodating one person, drawn by a coolie. The fare is 15 cents per hour and varying prices for short trips.

In addition to the jinricsha, there is only an omnibus line running every half hour from the railway station, near the northerly city limits, south on the main street to the canal, a distance of about 1 mile. The fare is 2 cents for the first section, 4 cents for the second section, and 5 cents for the third section.

In regard to suburban transportation lines, there is a narrow-gauge steam railroad extending from Yokohama to Tokyo, a distance of 18 miles, one train running each way approximately every hour from 6:30 a. m. to 11:05 p. m., the fare being, for the full distance, first class, 3 cents per mile; second class, 2 cents; and third class, 1 cent. This is the only railway in my district doing any considerable suburban business.

In Tokyo there is but one street railway company, which operates about 6 miles of track, all by horse power. The fare is 2 cents for each three-fourths of a mile. In Tokyo, as in Yokohama, the transportation is carried on largely by the jinricsha men.

The jinricshas are nearly all owned by private individuals, who pay a small license tax, which varies from year to year.

The Tokyo street railway is owned and operated by a corporation.

In addition to the usual local taxes, a small income tax is levied, usually from 1 to 3 per cent, on all transportation companies.

The local authorities do not undertake to compel such corporations to perform unusual services to any greater extent than is practiced by the same class of authorities against like companies in the United States.

While the facilities afforded by these street railways would not be satisfactory to the people of the average American city, the Japanese, not being used to the more modern methods of transportation, seem to be reasonably well satisfied.

W. D. TILLOTSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Kanagawa, August 7, 1891.

SIAM.

REPORT BY CONSUL-GENERAL BOYD, OF BANGKOK.

BANGKOK.

Bangkok is the capital and principal city of Siam. The number of inhabitants is an unknown quantity, but is not less than 600,000, and may be 800,000.

The Bangkok Tramway Company operates 9 miles of road in, over, and along the principal streets. The profit is very great, being not less than 30 per cent per annum on the amount invested. It pays no taxes, maintains the roadbed, and is subject to no special law. Carriages are hauled by Siamese ponies, which are very small, and go very fast. Eight cents American or 12 atts Siamese is the fare for the 9 miles, or 2 cents American for 1 mile. European and Siamese noblemen compose the stockholders of the company.

European carts, carriages, and traps in great numbers—heavy, cumbersome, and ungainly—and many Siamese omnibuses, hauled by ponies, traverse the main streets. The omnibus fare is 3 atts per mile. Water buffaloes draw heavy, two-wheeled carts loaded with bricks, sand, and stone. Farm and orchard products are boated to the city on canals. There are no country roads.

The charges are regulated by the authority of the King and council of administration. The cars are always crowded, as are also the omnibuses. Europeans do not patronize either the tramway or omnibuses.

About 600,000 ticals are invested in the tramway. It does not accommodate one-half of the public wants.

CHUANG MAI.

Chuang Mai, a city of 30,000 inhabitants, is situated on Moping River. Omnibuses, carriages, carts, traps, and heavy, two-wheeled wagons, drawn by mules, ponies, water buffaloes, and elephants, are the means of transportation. The roads and streets are very fine. There are no incorporated companies. A tramway would be a paying investment.

ZACON ZAMPENG.

This city is situated on Ma-Wong River, and has 15,000 inhabitants. It has fine streets and roads, and its modes of transportation are about the same as those of Chuang Mai.

LUANG PRABANG.

This city is situated on Ma-Kong River. Transportation methods are about the same as in Zacon Zampeng. Silk is the principal industry, which is taken to Korat on elephants and thence to Bangkok for export.

MUANG PRAH.

This city is situated on the Ma-Yam River, and has 8,000 inhabitants. Transportation is effected mostly by boats.

MISCELLANEOUS.

The jinricsha is used in all of the cities of the Kingdom of Siam. American and Australian horses command from 500 to 2,000 ticals, such as command in the market of New York $100 to $300. There are no American carriages or buggies here. There is no system of transportation here that would be an improvement in America.

The travel from city to city is by boats on the river and through canals from river to river. American missionaries do the most traveling over the Kingdom, always in boats rowed by four men.

Railroads are projected, under the auspices and advice of Europeans, but will never be constructed until the railroad builder from America puts his brain and muscle to it. Water ways, rivers, and canals are now and always will be the general mode of conveyance and travel. The greater parts of Siam are deltas and river valleys, rich, alluvial, and very productive.

S. H. BOYD,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Bangkok, June 17, 1891.

AUSTRALASIA.

FREEMANTLE AND PERTH.

REPORT BY CONSULAR AGENT SANDOVER.

Cabs are the only mode of public conveyance.

The following table shows the rates of fare for hackney carriages and vehicles plying for hire within the city of Perth, West Australia, which must not be exceeded in any case:

Fares.	Carriage having four wheels and two or more horses.	Hansoms and other vehicles having two or more wheels and one horse.	Vehicles plying for hire, per eight passengers, when hired as a whole vehicle.
By time.	*s. d.*	*s. d.*	*s. d.*
First hour	5 0	4 0	4 0
Second hour	4 0	3 0	3 0
Third hour	4 0	3 0	3 0
Every subsequent hour	3 0	2 6	2 6
(Half hours and quarter hours at same scale. The charges for each passenger within a radius of 1 mile of the town hall and under shall not exceed 6*d.* for all vehicles nor 1*s.* for hansom cabs.)			
By distance (outside 1-mile radius).			
Half a mile and any less distance	1 0	1 0	0 6
1 mile	2 0	1 6	1 0
Every half mile or fractional part thereof	1 0	0 6	0 6
Persons calling or sending for any carriage, cab, or other vehicle plying for hire, and not further employing same, exclusive of detention charge	1 0	1 0	0 6
(Half fare is allowed back if distance exceeds 2 miles, provided the fare is not by time. The driver must, before starting, agree with the hirer whether the hiring is by time or distance; if no such agreement, the hirer to choose.)			
Detention charges			
For every fifteen minutes after the first five minutes	1 0	1 0	0 6

There is no extra charge for luggage, if under 25 pounds weight.

The charges are determined in the city of Perth by the local authorities, and elsewhere by the proprietor.

The facilities satisfy the present demand, and may be considered profitable to those engaged in supplying them.

WILLIAM SANDOVER,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Freemantle, August 7, 1891.

MELBOURNE.

REPORT BY CONSUL-GENERAL WALLACE.

The citizens of "greater" Melbourne claim that they have better public transportation than any other city in the world. There are two systems in operation.

The steam railways of Victoria are owned and operated by the colony, and in addition to the through lines spurs and short lines have been constructed connecting nearly all of the suburbs with central stations in the business portion of the city. No expense has been spared in making the road-beds as substantial and solid as possible, and all are operated by the block system. Where possible the lines are carried either over or under the street crossings, and where level crossings can not be avoided such are furnished with gates, which are closed by an attendant one minute before train time. This permits a much higher rate of speed than would otherwise be possible—12 to 18 miles per hour, including stops—and accidents, even in the busiest of seasons, are few, and usually result from willful violations of the rules.

The following table shows the lines operated in the metropolitan area within a circle of 10½ miles, giving stations at either end, distances between, and number of intermediate stops:

From—	To—	Intermediate stations.	Length.
			Miles.
Spencer street	Williamstown	10	9¼
Mid-Footscray	Hatherly	1	1½
Do	Braybrook Junction	3	3¾
North Melbourne	Broadmeadows	9	9¼
Do	Campbellfield	11	9
Royal Park	Heidelberg	10	7¼
North Fitzroy	Preston Reservoir	8	5
Princes bridge	East Brighton	12	9½
Scotchmer street	Fitzroy	1	1½
Fairfield park	Riversdale	6	5¼
Oakleigh	Burnley	8	7¼
Caulfield	Oakleigh	3	3
Richmond	Kew	4	3¼
Hawthorn	Box Hill	6	5¾
Fluiders street	Brighton Beach	8	9
Do	St. Kilda	4	3½
Do		4	2¼
Total		108	94¼

Trains over these lines are run at intervals of from ten to forty minutes, as may be needed for the accommodation of the public. There are first and second class carriages, mostly built on the English model, with compartments and side entrances, which permit of quickly filling or emptying at way stations.

Tickets are issued for single and return trips, and monthly, quarterly, half-yearly, and yearly at the following rates: Single trip, about 1*d.* (2 cents) per mile, and return tickets at from one-third to one-half additional; monthly, from 2*s.* 6*d.* to 3*s.* (60 to 72 cents) per mile; quarterly, from 7*s.* 1*d.* to 7*s.* 11*d.* ($1.70 to $1.90) per mile; half-yearly, from 10*s.* to 13*s.* 9*d.* ($2.40 to $3.30) per mile; yearly, from £1 to £1 1*s.* 8*d.* ($4.80 to $5.20) per mile. Second-class tickets are sold at from one-third to one-half less than the above rates.

During the year ended July 1, 1890, 37,165,234 passengers were carried, and for the year ended July 1, 1891, 35,546,533.

Early in the eighties the extension of business and of the residence portion of Melbourne demanded better accommodation than was afforded by the then existing lines of omnibuses, which were being operated by the Melbourne Omnibus Company. After due consideration, it was determined to adopt the system of cable trams which had been developed in San Francisco. There is no doubt but that this decision was arrived at largely through the influence of Americans, who had organized and developed the old stage company during the days of the mining excitement in the fifties, and succeeded that as the Melbourne Omnibus Company. The cable tramways of "greater" Melbourne have been built by the various municipalities into which the several suburbs had been erected, under authority conferred by acts of Parliament constituting the tramways trust, which has pledged the credit of the municipalities to the extent of £1,630,000 ($8,150,000) in debentures having thirty years to run. This amount has been expended in construction, and the tramways leased to the Melbourne Omnibus Company, which was reorganized as the Melbourne Tramway and Omnibus Company (limited) under a special act of Parliament dated October 12, 1883. This act was amended November 3, 1883, by the Melbourne Tramways and Omnibus Company's branches act, and again December 12, 1884, by the Melbourne Tramways and Omnibus Company's additional branches and amendment act.

All of the acts of Parliament concerning tramways generally were consolidated into one at the last session of Parliament by "an act to consolidate the law relating to tramways," known as the "Tramways Act of 1890." The tramways are thus under the direct authority and control of the legislature of the colony, and, as these acts are full and explicit in every detail of organization, construction, and operation, and in provision for their final transfer to the municipalities, free from all encumbrance, they are hereto annexed.

The lines operated by cable have 41⅝ miles of double track, which is supplemented by 4¼ miles of double track operated as horse railways, and this is continued by various lines of omnibuses where travel is light.

The tramways and omnibus company has a nominal capital of £2,000,000, divided into two million shares of a par value of £1 each. Of these shares 960,000 have been issued paid up to 10*s.* each, giving a working capital of £480,000 ($2,400,000), upon which, after complying with every provision of the acts of Parliament, a dividend was declared for the past year of 20 per cent.

The total number of passengers carried during the year ended August 1, 1891, was 48,043,673, and the gross receipts amounted to £562,252 ($2,811,260).

The service rendered by the steam railways and the tramways has been very satisfactory to the public of Melbourne.

GEO. H. WALLACE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Melbourne, September 24, 1891.

TRAMWAYS ACT OF 1890.

[Inclosure in Consul-General Wallace's report.]

(1) This act may be cited as the tramways act, 1890, and shall come into operation on the 1st day of August, 1890, and is divided into parts as follows:

Part 1.—Construction of tramways, sections 3 and 4.

Part 2.—Delegation of powers to construct, etc., tramways, sections 5–12.

Part 3.—Assignment of delegated powers, sections 13–16.

Part 4.—Loans for the construction of tramways in country districts, sections 17–35.

Part 5.—Private tramways, sections 36 and 37.

(2) The acts mentioned in the first schedule to this act to the extent to which the same are thereby expressed to be repealed are hereby repealed; provided, that such repeal shall not affect any appointment, rule, regulation, order, application, assignment, demand, or advance made, or any authority delegated, or any notice or approval given, or any petition presented, or any poll taken, or any resolution passed, or any loan debenture issued, or any rate levied, or any interest payable, or any agreement or contract entered into, or any mortgage executed or effected under the said acts or any of them before the commencement of this act.

PART 1.—CONSTRUCTION OF TRAMWAYS.

(3) Tramways may be constructed in any municipal district, including the town of Geelong, except the municipal districts of Fitzroy, Collingwood, Prahran, Richmond, South Melbourne, Hotham, St. Kilda, Brunswick, Kew, Hawthorn, and Sandridge, when authorized as provided in the second schedule, and all the regulations in such schedule shall take effect as if contained in this act.

(4) The construction of tramways authorized pursuant to the regulations in the second schedule shall be deemed permanent works and undertakings within the meaning of part 11 of the local government act, 1890.

PART 2.—DELEGATION OF POWERS TO CONSTRUCT, ETC., TRAMWAYS.

(5) When the council of any municipality shall have obtained an order authorizing the construction of any tramway under the provisions of part 1 of this act, such council may, subject to the provisions in this part contained, delegate the authority conferred by such order to any person or corporation to construct, maintain, and manage such tramway upon such terms and subject to such conditions and stipulations not inconsistent with any of the provisions contained in such order as may be contained in any agreement in writing under the seal of such municipality and of the other party thereto; and upon the execution of such agreement, when the same shall have been approved by the governor in council, the rights, powers, privileges, and obligations which by the said order were granted to, or imposed upon, such council shall, for the purposes of the order, be possessed by and imposed upon such person or corporation in the same way as if such person or corporation were the council of the municipality.

(6) No proposition for delegating such authority shall be adopted by the council unless a notice thereof has been published in the Government Gazette, and also twice in some newspaper generally circulating in the neighborhood, not less than one month nor more than three months before such proposition is adopted, stating that it is the intention of such council to delegate the authority aforesaid to a person or corporation.

(7) Within one month after the publication of such notice as aforesaid, any twenty persons whose names are inscribed on the municipal roll may, by writing under their hands delivered to the chairman or clerk of the municipality, demand that the question whether or not such delegation of authority should be made be submitted to the election of the ratepayers.

(8) When any such demand has been made, the votes of the ratepayers shall be taken upon such question on a day to be fixed by the chairman of the municipality, not less than twenty-one nor more than twenty-five clear days after the delivery of such demand, and such day shall be forthwith notified in some newspaper generally circulating in the neighborhood, and on such day a poll shall be taken of all ratepayers who desire to forbid the council from delegating such authority; and at the taking of such poll papers in the form in the third schedule hereto shall be used instead of ballot papers, and the returning officer, his deputy, or such other person as may be appointed to take the poll, shall, at the request of any person whose name is on the roll and who desires to forbid the council from delegating such authority, deliver to such person as many of such papers as the number of votes to which such person appears by the roll to be entitled.

(9) One scrutineer, to be present in every polling booth, shall be appointed by the council, and the persons demanding a poll may, by writing under their hands or the hands of any three of them, appoint one scrutineer to be present in every polling booth.

(10) Immediately upon the close of the poll the returning officer or deputy or such other person as may be appointed at each polling booth shall proceed, in the presence and subject to the inspection of the poll clerk and of so many of the scrutineers as please to be present, to ascertain the number of votes recorded, and the deputy or such other person shall immediately forward a statement in writing, made up under the inspection of the scrutineers, of the total number of votes recorded, and such returning officer shall, as soon as conveniently may be on or after the day of the poll, give public notice of the number of votes recorded, and shall declare the council to be forbidden to delegate such authority or not to be so forbidden according as such number of votes forms or does not form one-third of the number of votes for which voters are inscribed on the municipal roll.

(11) Subject to the foregoing provisions of this part of this act, upon the submitting of any such question as aforesaid to the election of the ratepayers, all proceedings shall be had and taken as nearly as may be as upon an election of councilors.

(12) If no such demand is made as aforesaid that the question whether or not such delegation of authority be made be submitted to the election of the ratepayers, or if, on such demand being made, the ratepayers fail to forbid the council from delegating such authority, the council may at any time, not less than one month nor more than three months after the last publication of such notice as aforesaid, make application to the governor in council for approval of the purposes mentioned in such notice.

PART 3.—ASSIGNMENT OF DELEGATED POWERS.

(13) Any person or corporation by or upon whom the rights, powers, privileges, and obligations granted or imposed by any order of the governor in council under the provisions of part 1 of this act, authorizing the construction of a tramway to or upon the council of any municipality or any of them are, under the provisions of part 2 of this act or of this part of this act possessed or imposed, may, with the consent of the council of the municipality and of the governor, by deed under the seal of such person or corporation, assign, either absolutely or by way of mortgage, all or any of such rights, powers, privileges, and obligations to any other person or corporation upon such terms and subject to such conditions and stipulations not inconsistent with the order of the governor in council authorizing the construction of the tram-

way as may be contained in such deed, and upon the execution of such deed and the consent thereto by the council of the municipality under its common seal and the approval thereof by the governor, such of the said rights, powers, privileges, and obligations as may be so assigned shall be possessed by and imposed upon the assignee thereof, as if the assignee were the council of the municipality.

(14) The agreement in writing containing the terms, conditions, and stipulations upon the subject to which the council of any municipality delegates the authority conferred on such council by any such order of the governor in council as aforesaid authorizing the construction of a tramway, may contain a power of assignment, with the approval of the governor, absolutely or by way of mortgage, of all or any of the rights, powers, privileges, and obligations delegated by the council of such municipality.

(15) The approval of the governor in council to any agreement under the provisions of section 5 of this act for delegating the authority conferred by any order of the governor in council authorizing the construction of a tramway, and the approval of the governor to any assignment authorized by this part of this act, may be given either before or after any of the parties to such agreement or assignment may have executed the same.

(16) When the council of any municipality has duly adopted any proposition under the powers contained in part 2 of this act for delegating any authority conferred on it by any order of the governor in council authorizing the construction of a tramway, such council may at any time afterwards, with the concurrence of the person or corporation to whom the delegation is made, his or its assignee, make any alteration in any of the terms, conditions, or stipulations contained in the agreement for such delegation, or accept a surrender of all or any of the rights, powers, privileges, and obligations delegated without again publishing the notices mentioned in section 6 of this act or submitting the matter to the election of the ratepayers; provided always, that if such alteration be made after such agreement has been approved by the governor in council such alteration shall not be of any force until it also has been approved by the governor in council, and no such surrender shall be of any force until it has been approved by the governor in council, and from and after the approval of the governor in council of any such surrender the council of the municipality shall, except as to matters or things made or done, be in the same position with regard to the rights, powers, privileges, and obligations surrendered as if no delegation of them had been made.

PART 4.—LOANS FOR THE CONSTRUCTION OF TRAMWAYS IN COUNTRY DISTRICTS.

(17) Any moneys for the time being standing to the credit of an account kept in the treasury called "the country tramways trust fund" may be advanced by way of loan to the councils of shires for the construction of tramways in country districts in such sums as the governor in council may, by order to be published in the Government Gazette, from time to time determine, subject to the conditions hereinafter in this part contained.

(18) No sum shall be advanced for any one tramway exceeding on an average £2,000 for every mile of the length thereof.

(19) Every sum so advanced shall be repayable in such time or times, not exceeding thirty years, and shall bear interest at such rate not being less in any case than £4 per cent per annum, as the governor in council may in each case determine.

(20) No sinking fund shall be formed to liquidate any loan advanced under the provisions of this part of this act, but the governor in council shall determine a percentage not less than £2 per cent upon the amount of such loan, which shall be payable by the council of the shire every year into the consolidated revenue to liquidate the same.

(21) No sum shall be advanced under the provisions of this part of this act to the council of any shire for the construction of any tramway unless an order has been made authorizing the construction of such tramway under the powers contained in part 1 of this act by the council of such shire, either solely or jointly with the council of some other shire.

(22) No sum shall be advanced to the council of any shire under the provisions of this part of this act until such council has adopted a special order for borrowing such money under the provisions of part II of the local government act, 1890, or has made a tramway rate under the provisions herein contained sufficient to repay such advance, together with interest, in thirty years at the longest.

(23) In case the council adopts a special order for borrowing money under the provisions of part II of the local government act, 1890, debentures under the seal of the shire to the amount of the money to be advanced shall be delivered to the treasurer before the money is actually advanced; and such delivery shall be deemed a sale of such debentures at their nominal value to the board of land and works on behalf of Her Majesty, and the treasurer shall hold such debentures in such manner as the governor in council may from time to time direct.

(24) Before any such sum is advanced, every council to which the same is advanced shall execute a mortgage, under the powers contained in the twenty-eighth clause of the second schedule to this act, to secure repayment of such sum and interest at the rate aforesaid to the satisfaction of the governor in council, and shall comply with such other conditions as the governor in council may require.

(25) The governor in council may, by order published in the Government Gazette, authorize the sale of any debentures delivered to the treasurer to secure the repayment of any money advanced under the provisions of this part of this act; and thereupon the treasurer may, under such regulations, at such times and places, in such sums, on such conditions, and in such manner as the governor in council may direct, offer or cause to be offered for sale such debentures, and thereafter the property in such debentures and the coupons belonging thereto shall pass in manner provided in that behalf in part II of the local government act, 1890, and until the publication of such order such debentures shall not be assignable in any way, and the proceeds of such sale of debentures shall be placed to the credit of "the country tramways trust fund."

(26) It shall be lawful for the council of any shire to make and levy a rate, to be called a tramway rate, equally upon all the ratable property in any particular portion of the shire on the following conditions: (*a*) It must appear to the council of the shire that the tramway in respect of which such rate is made and levied would be for the special benefit of the particular portion of the shire; (*b*) a petition must have been presented to the council signed by one-third the number of the ratepayers in such portion of the shire praying the council to make and levy such rate; (*c*) an order must have been made authorizing the construction of such tramway under the powers contained in part I of this act; (*d*) the rate may be of such amount in the pound annually as may be mentioned in the petition; (*e*) such rate shall be made by special order distinctly defining the portion of the shire within which it is to be levied.

(27) Every tramway rate shall continue to be payable every year until the moneys advanced to the council of the shire hereunder, and all interest thereon, and all costs and expenses chargeable against such rate have been repaid.

(28) The council of any shire which has made a tramway rate shall, from time to time, levy equally upon the ratepayers liable to such rate so much only of the annual amount thereof as, having regard to the profits of the tramway (if any), and also to any probable failure to collect the entire amount of the levy, may be reasonably necessary to pay the moneys then payable to Her Majesty, on account of the advance to meet which such rate was made or the interest thereon or that will be payable at the time by which the amount leviable can be collected.

(29) The council shall, in every case in which they make or levy a tramway rate, cause a separate and distinct account to be kept of all moneys collected and received on account of such rate, and shall apply the same in liquidation of the principal and interest of the advance made to the council under the provisions of this part of this act, or of so much thereof as the profits of the tramway (if any) may not be sufficient to meet, and of the costs of collecting the said rate, and not otherwise.

(30) If and as often as after moneys have been levied and applied as in this part of this act provided on account of a tramway rate, the tramway should become so profitable that the receipts from it are more than sufficient to liquidate all the expenses connected with it, and also the moneys due and payable to Her Majesty in respect of any advance hereunder, the council shall place such profits to a separate account and apply them in or towards payment of all rates that may become payable to the shire in respect of ratable property in the district upon which the tramway rate was levied, in exoneration of the ratepayers, until the amount of such profit so applied is equal to the amounts levied on account of the tramway rate, with interest at the rate of £4 per cent per annum, and, subject thereto, the profits of the tramway shall form part of the municipal fund.

(31) If the council of any shire which has made a tramway rate makes default in payment of any moneys advanced to such council under the provisions of this part of this act, or any interest thereon, or any costs or expenses in accordance with the provisions of any mortgage by which the same are secured, the supreme court may, on the application of the attorney-general or the holder or holders of the debentures, appoint some person or persons, not exceeding three, to be a receiver or receivers of such tramway rate. Every such receiver shall be deemed an officer of, and shal act under the direction of, the supreme court, and shall be entitled to such commission or remuneration for his services as the supreme court may appoint.

(32) The supreme court may, from time to time, remove any such receiver, and on the death or removal of any such receiver may appoint some other person in his place.

(33) The receiver or receivers appointed as aforesaid shall be entitled to levy the tramway rate, or so much thereof as may, from time to time, be necessary to make good the moneys payable in respect of such advance, whether for principal, interest, or arrears, and for such purposes shall have and exercise all the powers of the council of the shire, and shall apply the money received by him or them, after payment of costs and expenses and of his or their commission, as the same ought to have been applied by the council of the shire.

(34) All moneys payable in respect of the interest of any advance made under the provisions of this part of this act to the council of any shire shall form part of the consolidated revenue, and all moneys paid in respect of the principal of any such advance shall be placed to the credit of "the country tramways trust fund."

(35) No advances shall be made out of the said country tramways trust fund except in pursuance of some act of Parliament; provided, that nothing herein contained shall refer to the original sum of £200,000 authorized by the railway loan act, 1885.

PART 5.—PRIVATE TRAMWAYS.

(36) The council of any municipality may, with the consent of the governor in council, grant authority to any person or company to lay down, construct, and maintain a tramway on, along, or across any street or road within its municipal district, subject to such terms and conditions as such council shall approve; provided, that such tramway shall be used only in connection with the business of such person or company, and for no other purpose whatsoever, and that such business shall not be the carriage of passengers or goods for hire.

(37) All tramways laid down and constructed before the passing of the tramways act, 1884, in, along, and across any road or street, with the sanction and approval of the council of the municipality in whose municipal district such road or street is situated, shall be removable and be removed upon resolution and order to that effect of such council, and unless and until any such resolution have been passed and such order made such tramways shall, for all purposes, be deemed to have been constructed under the provisions of this part of this act; and no action, suit, or other proceeding shall be taken against any person or corporation in respect of any such tramway as for any nuisance caused or alleged to be caused thereby so long as the same is maintained in a fit and proper condition and is not allowed to fall into disrepair.

SCHEDULES.

FIRST SCHEDULE.

In section 29 of the local government act amendment act, 1883 (47 Vict., No. 786), the following is repealed: "The construction of tramways authorized pursuant to the regulations in the second schedule shall be deemed permanent works and undertakings within the meaning of part 13 of the principal act;" also, section 51 and the second schedule.

The whole of the tramways act, 1884 (48 Vict., No. 819), is repealed.

Sections 8 to 15, both inclusive, and the first schedule of the local government amending act, 1884 (48 Vict., No. 831), are repealed.

The whole of the act to sanction the issue and application of certain sums of money as loans to shires for the construction of tramways in country districts (50 Vict., No. 915) is repealed; also, the whole of the municipal tramways (delegation of powers) act, 1887 (51 Vict., No. 919).

SECOND SCHEDULE.

Part 1.—Orders authorizing the construction of tramways.

(1) Orders authorizing the construction of tramways in any municipal district may be obtained by the council of the municipality, and any such municipality shall be deemed to be promoters of a tramway, and is in these regulations referred to as "the promoters."

(2) Every application for an order authorizing the construction of a tramway shall be in writing under the common seal or common seals of the promoters, and shall be in such form and contain such information and be supported by such evidence as may be for the time being prescribed by the rules of the governor in council hereunder, and shall be left with the minister; and, in case money is to be borrowed for the purposes of the order, shall be accompanied by evidence that the requirements of sections 319 to 327, inclusive, of the local government act, 1890, have been complied with, and by certified copies of the plans and specifications and estimates open for inspection in accordance with the section 320 of the said act, and the governor in council shall not take into consideration any application until fourteen days after the foregoing requirements have been complied with.

(3) The governor in council shall consider the application, and may, if he thinks fit, direct an inquiry in the district to which the same relates, or may otherwise inquire as to the propriety of proceeding upon such application.

(4) Where it appears to the governor in council expedient and proper that the application should be granted, with or without addition or modification or subject or not to any restriction or condition, the governor in council may settle and make an order accordingly.

(5) Every such order shall empower the promoters therein specified to make the tramway upon the gauge and in manner therein described, within the municipal district or districts of the promoters, upon any public highway or elsewhere, and shall contain such provisions as the governor in council, according to the nature of the application and the facts and circumstances of each case, thinks fit, but so that any such order shall not contain any provision for empowering the promoters to acquire lands except to an extent therein limited.

(6) Every such order shall specify the nature of the traffic for which such tramway is to be used, and the tolls and charges which may be demanded and taken by the promoters in respect of the same, and shall contain such regulations relating to such traffic and such tolls and charges as the governor in council shall deem necessary and proper.

(7) The costs of and connected with the preparation and making of each order and of any inquiry in relation thereto shall be paid by the promoters, and the governor in council may require the promoters to give security for such costs before they proceed with the application for the order.

(8) When an order has been settled and made as aforesaid and delivered to the promoters, the promoters shall forthwith deposit printed copies of the order for public inspection in the

office of the clerk of the peace of every bailiwick through any part of which they are authorized to construct the tramway.

(9) The governor in council, on the application of any promoters empowered by an order, may from time to time revoke, amend, extend, or vary such order by a further order. Every application for such further order shall be made in like manner and subject to the like conditions as the application for the original order. Every such further order shall be made in like manner in every respect as the original order.

(10) Subject and according to the provisions of these regulations, the governor in council may, on a joint application or on two or more separate applications, settle and make an order empowering two or more municipalities respectively jointly to construct the whole or separately to construct parts of a tramway and jointly or separately to own the whole or parts thereof; and all the provisions of these regulations which relate to the construction of tramways shall extend and apply to the construction of the whole and the separate parts of such tramways as last aforesaid, and the form of the order may be adapted to the circumstances of the case.

(11) The council of every municipality interested in any tramway shall cause to be kept a separate account of all moneys received from the working of tramways, which shall be charged: (*a*) With the interest and percentage required to form the sinking fund in respect of every loan raised for the construction of tramways; (*b*) with the cost of maintaining the tramways in good repair, of providing and maintaining carriages and motive power, and of carrying on the traffic thereon; (*c*) with any surplus remaining, which the council is hereby empowered to transfer to the municipal fund.

Part 2.—General provisions.

(12) The promoters of tramways authorized by order may use on their tramways carriages with flange wheels or wheels suitable only to run on the rail prescribed by such order, and subject to the provisions of such order and of these regulations the promoters shall have the exclusive use of their tramways for carriages with flange wheels or other wheels suitable only to run on the prescribed rail.

All carriages used on any tramway shall be moved by the power prescribed by the order, and, where no such power is prescribed, by animal power only.

No carriage used on any tramway which is hereafter authorized by order shall extend beyond the outer edge of the wheels of such carriage more than 11 inches on each side or measure in width more than 7½ feet.

(13) The order authorizing the construction of a tramway may make provision for securing to the public the full benefit of such tramway, and to that end may prescribe what provisions shall from time to time be made by the promoters for the carriage of goods and passengers thereon and for the use thereof and for traffic thereon, and may prescribe what consequences, whether of forfeiture, cesser, or determination of powers or otherwise shall follow any breach by the promoters of the requirements of such order, and such order may prescribe that the governor in council shall be the sole judge of the fact whether such requirements have been complied with, and the governor in council in such case may inquire into the matter in such way as he thinks fit, and his decision shall be final.

(14) The promoters of any tramway may, from time to time, in manner provided by part 7 of the local government act, 1890, make, alter, and repeal by-laws for preventing the commission of any nuisance in or upon any carriage or in or against any premises belonging to them, for regulating the traveling in or upon any carriage belonging to them, and for fixing within the limits allowed by the order authorizing the construction of the tramway the tolls and charges payable for using the same.

In case two or more municipalities are the promoters of a tramway, such by-laws may be made, altered, and repealed in manner provided by part 7 of the said act for making, altering, and repealing joint resolutions.

The provisions of the said act as to by-laws, including the provisions as to the imposition, enforcement, and application of penalties, shall apply to by-laws made hereunder.

(15) If any person willfully obstructs any person acting under the authority of any promoters in the lawful exercise of their powers in setting out or making, forming, laying down, repairing, or renewing a tramway, or defaces or destroys any mark made for the purpose of setting out the line of the tramway, or damages or destroys any property of any promoters, lessees, or licensees, he shall, for every such offense, be liable to a penalty not exceeding £5.

(16) If any person without lawful excuse (the proof whereof shall lie on him) willfully does any of the following things, namely, interferes with, removes, or alters any part of a tramway or of the works connected therewith; places or throws any stones, dirt, wood, refuse, or other material on any part of a tramway; does or causes to be done anything in such manner as to obstruct any carriage using a tramway or to endanger the lives of persons therein or thereon; or knowingly aids or assists in the doing of any such thing, he shall, for every such offense, be liable (in addition to any proceedings by way of presentment, indictment, or otherwise to which he may be subject) to a penalty not exceeding £5.

(17) If any person traveling or having traveled in any carriage on any tramway avoids or attempts to avoid payment of his fare, or if any person having paid his fare for a certain distance knowingly and willfully proceeds in any such carriage beyond such distance and does not pay the additional fare for the additional distance or attempts to avoid payment thereof, or if any person knowingly and willfully refuses or neglects, on arriving at the point to which he has paid his fare, to quit such carriage, every such person shall, for every such offense, be liable to a penalty not exceeding 40*s*.

(18) It shall be lawful for any officer or servant of the promoters of any tramway, and all persons called by him to his assistance, to seize and detain any person discovered either in or after committing or attempting to commit any such offense as in the next preceding section is mentioned, and whose name or residence is unknown to such officer or servant, until such person can be conveniently taken before a justice, or until he be otherwise discharged by due course of law.

(19) No person shall be entitled to carry or to require to be carried on any tramway any goods which may be of a dangerous nature; and if any person send by any tramway any such goods without distinctly marking their nature on the outside of the package containing the same, or otherwise give notice in writing to the bookkeeper or other servant with whom the same are left at the time of such sending, he shall be liable to a penalty not exceeding £100 for every such offense; and it shall be lawful for such promoters or lessees to refuse to take any parcel that they may suspect to contain goods of a dangerous nature, or require the same to be opened to ascertain the fact.

(20) If any person, without the permission of the promoters or lessees, uses a tramway or any part thereof with carriages having flange wheels or other wheels suitable only to run on the rail of such tramway, such person shall, for every such offense, be liable to a penalty not exceeding £20.

(21) The promoters or lessees of any tramway shall be answerable for all accidents, damages, and injuries happening through their act or default or through the act or default of any person in their employment by reason or in consequence of any of their works or carriages, and shall save harmless all authorities, companies, or bodies, collectively and individually, and their officers and servants from all damages and costs in respect of such accidents, damages, and injuries.

(22) All tolls and charges under these regulations or under any by-law made in pursuance thereof may be recovered and enforced before any two justices, and every person guilty of an offense against these regulations shall be deemed guilty of an offense against the local government act, 1890.

(23) Nothing in these regulations shall limit or interfere with the rights of any owner, lessee, or occupier of any mines or minerals lying under or adjacent to any road along or across which any tramway shall be laid to work such mines and minerals; nor shall any such

owner, lessee, or occupier be liable to make good or pay compensation for any damage which may be occasioned to such tramway by the lawful working in the usual and ordinary course of their mines and minerals.

(24) Nothing in these regulations or in any by-law made under them shall take away or abridge the right of the public to pass along or across every or any part of any road along or across which any tramway is laid, whether on or off the tramway, with carriages not having flange wheels or wheels suitable only to run on the rail of the tramway; provided that, in cases of tramways constructed in shires, the governor in council may in any order granted under these regulations provide for certain crossing places only over any such tramway, to be specified in such order.

(25) Every inquiry, except under the thirteenth clause of these regulations, which, by these regulations, the governor in council is empowered to make or direct, and any inquiry under the said thirteenth clause of these regulations, if in the order it is provided that the inquiry shall be made as provided by this clause of these regulations, shall be made in accordance with the following provisions: (*a*) The inquiry shall be held in public before any officer to be appointed in that behalf by the governor in council, hereinafter called the referee, and whose appointment shall be by writing, which shall specify all the matters referred to him; (*b*) ten days' notice at the least shall be given by the referee to the parties upon whose representation the governor in council shall have directed the inquiry of the time and place at which the inquiry is to be commenced; (*c*) the inquiry shall be commenced at the time and place so appointed, and the referee may adjourn the inquiry from time to time as may be necessary to such time and place as he may think fit; (*d*) the referee shall have power to hear, receive, and examine evidence, and by summons shall, on the application of any party interested in the inquiry, require the attendance before himself, at a place and time to be mentioned in the summons, of any person to be examined as a witness before him, and every person summoned shall attend the referee and answer all questions touching the matter to be inquired into, and any person who willfully disobeys any such summons or refuses to answer any questions put to him by such referee for the purposes of the said inquiry shall be liable to a penalty not exceeding £5, to be imposed by the referee by writing under his hand, and recovered by any person authorized so to do by such referee before a justice of the peace; provided always, that no person shall be required to attend in obedience to any such summons unless the reasonable charges of his attendance shall have been paid or tendered to him, and no person shall be required in any case, in obedience to any such summons, to travel more than 10 miles from his place of abode; (*e*) the referee shall make his report to the governor in council in writing, and shall deliver copies of the report upon request to all or any of the parties to the inquiry.

(26) The governor in council may, from time to time, by order published in the Government Gazette, make, alter, and repeal rules with respect to the following matters: (*a*) The forms of applications for orders and the plans and sections of works and other information and evidence to be deposited by promoters under these regulations; (*b*) as to any other matter or thing not inconsistent with these regulations in respect of which it may be expedient to make rules for the purpose of carrying these regulations into execution. Any rules made in pursuance of this clause shall be deemed to be within the powers conferred by these regulations, and shall be of the same force as if enacted in these regulations.

(27) The promoters of any tramway, with the consent of the governor, may let on lease for any term not exceeding fourteen years, and subject to any exceptions, reservations, covenants, and conditions, any tramway, together with the tolls and other charges payable in respect thereof and the carriages and other appliances appertaining thereto; and during the continuance of any such lease the promoters shall not make, alter, or repeal any by-laws relating to such tramway without the consent of the lessees.

(28) The council of any municipality may, subject to the provisions hereinafter contained, secure any moneys borrowed for the construction, extension, or improvement of a tramway by mortgage of the tramway and the carriages and appliances appertaining thereto and all the

rights and powers of the council as promoters thereof. When it is intended that any loan shall be secured by such mortgage as aforesaid, the notice mentioned in section 320 of the local government act, 1890, shall state that it is proposed to secure repayment of the loan by mortgage of the tramway. The mortgage shall be made either to the purchasers of the debentures or to any persons, whether purchasers of debentures or not, as trustees for the debenture holders, and shall contain such reasonable provisions for the security of the lenders and the protection of the borrowers as the council may deem expedient. The debentures, by sale of which the loan is raised, shall state, in addition to the matters in the eighteenth schedule of the said act, that they are secured by such mortgage as aforesaid, describing the mortgage so as to identify the same.

THIRD SCHEDULE.

Shire of ———, [or as the case may be]:

This is to forbid the council of the ——— from proceeding further with a proposition for delegating authority for the construction of a tramway, notice of which has been published in the Government Gazette of ———.

Directions.

This paper is to be dropped by the voter desiring to forbid the above-mentioned proposition for delegating authority for the construction of a tramway into the ballot box. The voter is not permitted to take his ballot paper out of the ballot room or polling booth.

POLYNESIA.

HAWAII.

REPORT BY CONSUL-GENERAL SEVERANCE, OF HONOLULU.

(1) On the island of Oahu there are 20 miles of narrow-gauge steam railway and 12 miles of street railway operated by horses and mules. There is also public conveyance by some ten carriage companies for urban and suburban transportation. On the island of Hawaii there are 20 miles of narrow-gauge steam railway, running from the port of Mahu-Kona to Kohala. for both freight and passengers. On the island of Maui there are 15 miles of narrow-gauge steam railway, running from the port of Kahului to Wailuku, Paia, and Spreckelsville, for freight and passengers.

(2) All the lines are owned by corporations and individuals.

(3) Rates of fare by steam railway are as follows: First and second class, from 2½ to 4 cents per mile, commutation tickets at 1½ cents per mile; by tramway or horse cars, 5 and 10 cents, according to distance; carriage hire, single person, within city limits, 25 cents and $1.50 per hour, and two passengers, $2 per hour.

(4) The railway franchise on Oahu is granted by the Government for fifty years and $700 subsidy per mile for five years for each mile of road constructed.

(5) Railway passenger transportation is limited by charter to 6 cents per mile. The road is conducted solely by the corporation. No services are required by the local or Government authorities under the charter.

(6) The present railroad facilities are increasing, and so far are satisfactory and reasonably profitable.

H. W. SEVERANCE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Honolulu, June 13, 1891.

CONSULAR REPORTS

ON

UNDERGROUND CONDUITS

IN

FOREIGN COUNTRIES, ETC.

UNDERGROUND CONDUIT CIRCULAR.

DEPARTMENT OF STATE,
Washington, June 9, 1891.

To the consular officers of the United States:

GENTLEMEN: You are instructed to prepare a report on the subject of underground conduits for telephone, telegraph, and electric-light wires and for electric-power cables in your district, for publication in the CONSULAR REPORTS.

I am, etc.,

WILLIAM F. WHARTON,
Acting Secretary.

AUSTRIA-HUNGARY.

VIENNA.

REPORT BY CONSUL-GENERAL GOLDSCHMIDT.

There has been but very little done as yet in Austria for the introduction of the electric light, and it is but a few years ago that the telephone was introduced for public use in the city of Vienna. The transmission of power by electric cables has not, to my knowledge, been put into practice yet in Austria.

There are at the present time in Vienna about 70 miles of underground telephone wires, laid in trenches along the sidewalks. Of telegraph wires there are none underground, with the exception, perhaps, of an underground telegraphic connection of the war department with the different barracks.

For electric lighting there are three companies established in Vienna. The Siemens or General Electric Company has about 20 miles of underground light cable, which is iron sheathed and laid in ditches covered with one brick. The International Electric Company owns about 30 miles of underground light cable, which is lead covered and laid in wooden troughs covered with pitch. The Imperial Continental Gas Association, which only furnishes electric light to the two imperial theaters, owns only about 5 miles of underground cable, which is lead covered and laid in big trenches.

In the provincial towns of my district there are, to my knowledge, no underground cables of any kind in use yet.

JULIUS GOLDSCHMIDT,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, November 24, 1891.

BELGIUM.

ANTWERP.

REPORT BY CONSUL STEUART.

There is only one underground conduit in this city and district, and this is used for telegraph purposes. This line runs from the telegraph office near the exchange in the center of the city to the telegraph office at the principal railway station. It was built by the State in 1884, and has a total length of 1,087.4 meters. The conduit contains about twenty-five wires closely bound together.

The line has never given entire satisfaction to the authorities since it was built, and in its stead an air line is projected, which will probably soon be established.

JOHN H. STEUART,
Consul.

UNITED STATES CONSULATE,
Antwerp, September 18, 1891.

BRUSSELS.

REPORT BY CONSUL ROOSEVELT.

The Belgian telegraph service, following the example of the German and English services, put down in Brussels in 1851 the first underground telegraph. It was destined to unite the office at the northern railroad station with that at the southern railroad station. This line was of wires covered with gutta-percha laid in a trench and protected by earthen pipes only at the intersection of streets. Notwithstanding the precaution taken in the construction of this line, it only lasted four years. The principal cause of deterioration was directly attributable to the nature of the conductors; the covering was made of gutta-percha, which at that time was not only imperfectly manufactured, but was mixed with sulphur.

In 1854 a new line was laid, composed of wires in gutta-percha, deposited in a pine conduit. Renewed in 1859, it was abandoned in 1866 and replaced by a line of which the conduit was made of cast-iron pipes, split longitudinally (Delperdange's pipes). This disposition permitted the direct laying of the cables without submitting them to traction or friction. This line is still in use.

In the same year a similar line, uniting the offices at the eastern railroad station with the exchange, was laid at Antwerp. After having been first replaced in 1865 by a line of which the conduit was made of cast-iron pipes

in the form of a "U," it was temporarily abandoned, but replaced in 1870 by a line with cables provided with metallic covering laid directly in the ground. In 1884 a second and similar line was constructed. This method of construction is the same as that employed in Germany.

CABLES.

Two kinds of cables are used in Belgium—cables with metallic casing and cables without casing.

(1) Cables with metallic casing are composed of seven conductors formed of a cordage made of seven annealed copper wires, each 0.6 millimeter in diameter. These conductors are first covered with Chatterton's compound and then two layers of gutta-percha, cemented together by a layer of the compound. The seven strands are twisted into a spiral, the whole being covered with tarred rope. The whole is then protected with sixteen galvanized iron wires of 3.75 millimeters in diameter. Each strand presents a diameter of 4.93 millimeters. The maximum resistance of the conductor should not be more than 9.8 ohms per kilometer at 18° C. The minimum resistance of isolation at the same temperature and after an electric charge of one minute's duration by means of a battery of 100 elements Leclanché should be at least 400 megohms per kilometer.

(2) The cables without casing are composed of seven copper conductor wires of 1.55 millimeters in diameter inclosed in two layers of gutta-percha of 1.5 millimeters in thickness. The seven wires are united in the form of a cable by a casing of hemp, coated with Swedish tar. A band of cloth not tarred, rolled in a spiral, forms the exterior covering of these cables.

DELPERDANGE'S CONDUITS—CABLES WITHOUT CASING.

The disposition devised by M. Delperdange has for its object the protection of the cables from any deterioration.

Pipes.—The cables are placed in a conduit made of cast-iron pipes 3 meters in length and 8 millimeters in thickness. (See Fig. 1.)

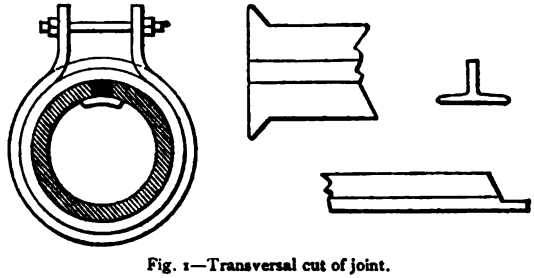


Fig. 1—Transversal cut of joint.

These pipes, provided with a rim at the extremities, are split longitudinally so as to permit the introduction of the cables without submitting them to any traction or friction.

The groove, 0.025 meter in width, is closed by a piece of iron in the form of an inverted "T" with obliquely cut ends. The space left free by the piece of iron "T" shape is filled with mastic iron to make it perfectly air-tight.

Joining of the pipes.—When the pipes are united end to end and the cables are placed in the conduit, a special piece of cast iron is introduced in the groove in the rim. This piece exactly fits the form of the rim; it rests on the base of the inverted "T," and is fastened by means of mastic iron. The ends of the "T" are purposely cut so as to permit the placing of this piece of cast iron. An India-rubber band 0.045 meter in width and 0.00325 meter in thickness encircles the junction of the pipes. The extremities of the band are cut to a level angle and are united by means of a button and simulated buttonhole in the respective ends. A wrought-iron band, with ends turned at right angles and brought together by a screw bolt, is placed over the band. To prevent puckering of the rubber ring during the placing of the screw bolt, a small plate of brass is placed between the rubber and the iron bands at the point where the ends of the rubber band are joined.

Openings.—The lines made with Delperdange's pipes are divided into sections by means of openings. These openings are cylindrical and are about 0.4 meter in diameter. They are furnished with two tubulated openings, 0.3 meter in length, and closed by means of a cover united to the body of the opening by a joint similar to that effected at the juncture of the pipes (Delperdange's joint). Although Delperdange canalization is constructed to be perfectly tight, it is often otherwise, and frequently the openings have been found to be filled with water, which defect would be inconsequential if the underground lines were in the country; but in cities the water contains substances susceptible of attacking the gutta-percha. This system of canalization having given unsatisfactory results, it has been abandoned by the service. The present underground lines are constructed according to the German system.

GERMAN SYSTEM—CABLES WITH METALLIC CASINGS AND TRENCH MADE OF BRICKS.

Preparation of cables.—Before being used, and to preserve the metallic casing from dampness, the cables receive a coat of asphalt, preparatory to being covered with asphalted bands. They are then rolled on a wooden bobbin, through the center of which is run a hollow cast-iron handle of rectangular form. Each bobbin contains from 400 to 500 meters of cable. The bobbins are mounted on a truck supplied with two movable wheels united by a fixed axle. The cables are thus brought to the trench, and, after having been deposited in it, receive a final coat of asphalt.

Trenches.—The trench destined to receive the cables is about 1 meter wide and 0.5 meter deep. Its direction is traced by the line. Before receiving the cables, the bottom of the trench is covered with washed sand, that is to say, sand free from stones and other hard substances that might deteriorate the casing and injure the gutta-percha. The sand should be free from salt, as this substance, expanding under the influence of the mois-

ture of the soil, is apt to ruin the brick trench. The trench is composed of two walls of bricks laid on edge at the bottom of the trench and covered by bricks laid flat. (See Fig. 2). It only serves to indicate to workmen who are occupied at other canalizations the position of the underground line.

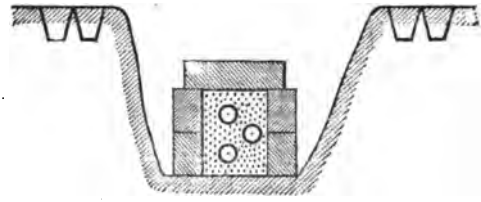


FIG. 2.

The work is so conducted that a section of about 100 meters of the trench is dug before the laying of the cables in the preceding section is terminated.

Laying cables.—The truck which carries the bobbin on which the cable is rolled is placed astride the trench, and the cable is drawn directly to the bottom of the trench. When there are several cables to be placed, the bobbins are taken off the trucks and rolled along the trench. The cables are thus deposited at the same time, and the work is done quickly. To operate in this way it is necessary that the bobbins should be circular and not hexagonal; the latter should never be employed. When the cables are placed, the brick trench (*encoffrement*) is filled with fine sand covered by bricks laid flat. The trench is then completely filled with sand, packed hard, and, finally, the pavement is put down over it.

Openings.—Underground lines are divided into sections by means of cast-iron openings placed at intervals of 100 meters, to permit easy search for breaks or other disarrangements. In case a section requires replacement, it is necessary to finish the work in a day. The openings are fixed at 100 meters to facilitate repairs. The principal conditions to be observed regarding the openings are as follows:

(1) They must be as tight as possible; in fact, the cables, before being introduced into the openings, are deprived of the metallic casing for about 1.5 meters, the gutta-percha covering the conductors being consequently uncovered. It would soon deteriorate if the gas escaping from the pipes or from sewers should have access to the openings.

(2) They should be so constructed that the laying of the cables can be made directly. The work is quickly done to prevent the deterioration of the metallic casing.

(3) The dimensions should permit the conductors to be laid in a regular manner and aid in as great degree as possible the making of the joints. It is necessary that the gutta-percha wires should not come in contact with the opening. The telegraph service has adopted the rectangular form.

The openings are in two parts, which are joined together by means of bolts. To make them water-tight the joints are made of mastic iron, and

the tubulures by which the cables are introduced are stuffed with tow. The openings, before being closed, are tarred on the interior. As has been seen, the ends of the cables are stripped of their casings; at the point where it is cut it is secured by means of a fine iron wire wound firmly around the cable. The different conductors are then separated and joined to the conductors of the cables laid in the next section. All the wires of the same cable are then united, and a band of cloth soaked in wood tar is wound around them.

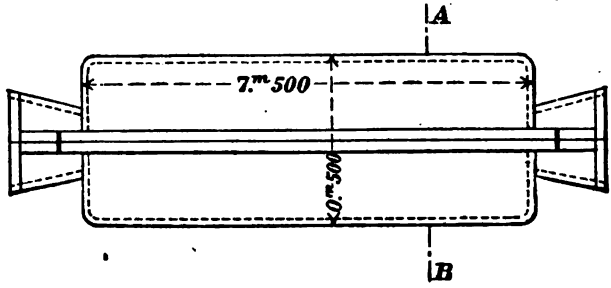


FIG. 3.

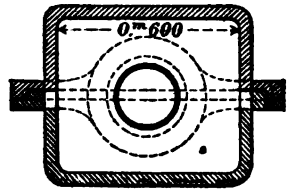


FIG. 4.

Numbering the wires.—The numbering of the wires is of the greatest importance in laying the cables—not especially for the construction of the line, but in case of repairs. The numbering of the wire permits the following of the wire along the entire line. When the first section is laid, each conductor receives electric current from a pile having one of its poles in communication with the ground through a galvanometer at the other end of the section; that is to say, at the first opening the man having charge of the numbering receives the current transmitted through a second galvanometer, of which one of the ends is in communication with the ground and the other is connected by a wire which touches each of the conductors of the cable to be numbered. When the hands of the two apparatus turn the wire is determined. The men at the ends of the section put a lead ring around the wire, upon which they mark a number. The same thing is done to the cable that is laid in the following section and ending in the same opening. The conductors bearing the same number are united together by means of joints. The ends of the cables situated in the same opening should also be furnished with special numbers.

Making of joints.—The joints must be carefully made so as to prevent afterward any disarrangement that might occasion serious difficulties in

telegraphic communication. In Belgium two kinds of joints are made—(1) twisted joints and (2) beveled joints. The first are made in the underground telegraph lines and the second in the submarine lines.

(1) The workman intrusted with the making of the joints is provided with an assistant. A tent is provided, placed over the opening to protect them, as well as the cables, from the inclemency of the weather. After having stripped and carefully cleaned the ends of the wires to be joined for a length of 0.02 meter the joiner makes the twists; these should not leave any space where air might enter between the metal and the chatterton, which should cover it, nor should they present any roughness capable of injuring the casing of gutta-percha. The joiner then cleans the splice with wood naphtha and files slightly the conductors to make them smooth; they are then soldered. When this work is finished he coats the parts soldered with chatterton heated by a wood-naphtha lamp. The two ends of the gutta-percha casing covering the conductors are drawn together until they come in contact with the chatterton. The joints are again heated so as to eliminate all dampness, when they are smoothed by a hot iron. The iron is also heated by the wood-naphtha lamp. A new layer of chatterton is then applied, which is again heated and smoothed. A sheet of gutta-percha, the size of the joint to be covered, is cut and, after having been heated, not permitting it to burn, is put over the joint. The edges of the sheet are united and pressed so as to drive out any air that might remain between the gutta-percha and the chatterton. The ends of the gutta-percha are then cut. After having heated equally all parts of the splice, the cut is completely closed with chatterton, as well as the two ends of the gutta-percha casing; then it is again heated and smoothed with a hot iron. When this operation is done the joiner rubs the splice lightly with his moist hands until the gutta-percha cools a little, and then more energetically. To prevent the gutta-percha and the chatterton from adhering to the fingers and tools it is necessary to moisten them. A joint to be well made should be smooth, without swelling or interference in cohesion; if these should exist, it would denote a bad cohesion between the gutta-percha and the chatterton. It should likewise be exempt from holes. These are of two kinds—round and oval—and are seen on the surface of the splice when the gutta-percha has been rubbed too hard or irregularly heated. In the first case the holes are produced by the rapid evaporation of the water and the sudden expulsion of the air that is in the isolating substance; in the second case they are caused by the irregular dilatation of the gutta-percha. So as not to introduce any injurious substance into the splice the joiner should always have his hands clean, and moisten them, as well as his tools, only with saliva.

(2) After having stripped the conductors of their casing, similarly as for twisted joints, the joiner bevels the copper wires by filing them over a length of about 1 centimeter. So as not to soften the guttá-percha and to prevent the introduction of the copper filings into that substance, the joiner should hold the conducter by the metal and not by the gutta-percha. When the

beveling is finished, the wires to be joined are placed into two vises and so superposed as to form but one conductor. The wires should be tightened by the vises in their metallic parts, so as not to injure the gutta-percha. One of the vises attached to the workbench, being movable, is manipulated so as to accurately place the two beveled ends one upon the other. The joiner then solders and files them to render them cylindrical. Fine copper wire is wound around the soldered parts. The coils of this ligature should not be superposed, and the ends severed by cutting pinchers should not project, as any unevenness might injure the gutta-percha casing covering the wires. The joiner makes a new soldering, employing as little pewter as possible, so as to avoid producing any protuberances in the conductor. Care must be exercised also to prevent fusion of the ligatures. When the joiner has brushed the soldering and slightly filed the conductor, he finishes the work in the same manner employed in twisted joints. When the second soldering is well done, filing is unnecessary and avoids the cutting of the ligature wire.

In submarine lines, the joiner makes two ligatures, the second of long coils, soldering only the two ends. This ligature serves as a conductor in case the wire breaks at the joint. When the cables are composed of conductors formed of several twisted copper wires, the joints may be twisted together—which is the simplest method—or united by a beveled joint. In the latter case the copper wires are soldered together and then beveled.

Electric trials of the joints.—When the second section of the line is laid, the verification of the joints is made in the first opening. The conductors in the second opening are isolated by covering the ends with chatterton; then the resistance of isolation is measured: (1) By leaving the joints exposed to the air, and (2) by plunging them into a tub of water in communication with the ground. The results obtained in the two trials should be equal, or nearly so.

Electric trials.—Tests of underground lines consist in the measurement of resistance to the conductibility and isolation, and in the measurement of capacity.

Resistance of the conductibility.—The measurement of conductibility is effected at the time of the reception of the cables. The operator has the two extremities of all the wires of the cable curled, and he determines the total resistance of the conductor thus formed by the method of Wheatstone bridge.

Resistance of isolation.—The trial of isolation is made by the method of deviation. Thomson's galvanometer, with mirror, is employed. This trial consists of three operations: (1) The examination of the exactness and endurance of the galvanometer; (2) the verification of the wire of communication; (3) the determination of the resistance of isolation of each conductor of the cable. To determine the exactness and endurance a circuit is formed including a pile of 50 elements Leclanché, a resistance of 100,000 ohms, and the galvanometer shunted at 1,000 megohms. In admitting 1

volt as the electromotor force of Leclanché element, and in neglecting the resistance of the pile, the result obtained, according to the law of Ohm, is—

$$I=\frac{E}{R}=\frac{50\,E}{100{,}000}=1{,}000\,\delta.$$

As the measurement of the isolation of the cable is made with a pile of 100 elements instead of 50, the value of I, that is to say—

$$I=\frac{100\,E}{100{,}000}=2{,}000\,\delta.$$

The verification of the wire of communication is made in the same manner as the trial of isolation of the conductor of the cable. The end nearest the wire at the limit A of the key of the short circuit (see Fig. 5) is attached to it, while the other end is isolated. The ground wire is attached to limit B of the inversion key, and the pile of 50 elements is replaced by one of 100. The deviation obtained on the scale of the galvanometer after successively lowering the two keys should not be over 3 or 4 ohms. In case the deviation is above this, the cause should be ascertained and remedied.

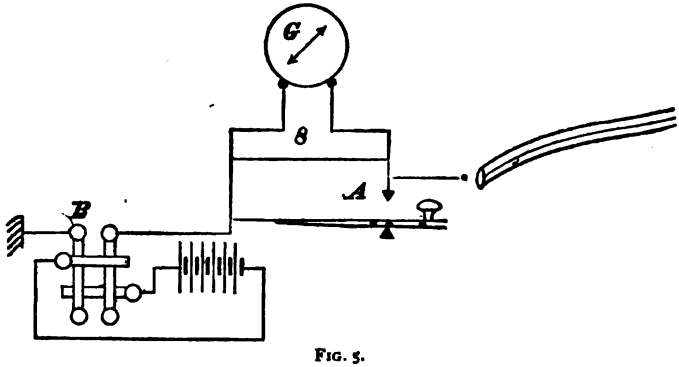


FIG. 5.

When the installation indicated in Fig. 5 is made, care should be exercised to avoid inverting the line and ground wires. In neglecting this precaution, extraneous currents, arising from bad isolation of the pile, pass through the galvanometer and falsify results. It is also necessary in the trials to employ the current supplied by the zinc pole of the pile, as the copper current is apt to conceal defects. To determine the resistance of isolation of the conductor, one end is attached to the wire of communication, while the other is isolated. In case the latter is in an office, it can be isolated by carefully cleaning it and removing the gutta-percha for 2 or 3 millimeters in cutting it to a point. But if, on the contrary, the end of the wire is out in the open air, it is prudent to cover it with paraffin or chatterton. When this operation is terminated, the key of immersion, as well as that of the short circuit, is lowered, and after a minute of electric charge the result of the deviation is read on the scale of the galvanometer, that is, this deviation δ'. Supposing the galvanometer shunted at 100 megohms, the devia-

tion which ought to have been obtained without shunting should have been 100 δ'. It results $I'=100\,\delta'$, hence—

$$\frac{I}{I'}=\frac{2{,}000\delta}{100\delta'}=\frac{x}{100{,}000.}$$

$$x=\frac{200{,}000{,}000\delta}{100\,\delta'}\text{ ohms}=\frac{2000\delta}{100\delta'}\text{ megohms}=\frac{100\times 2\delta}{100\,\delta'}\text{ megohms.}$$

To obtain directly the value of the resistance of isolation in megohms it suffices to multiply the constancy by 100 and divide that result by the deviation read on the scale multiplied by the multiplicator power of shunt.

Capacity.—To measure the electrostatic capacity of a cable the cable to be operated on and a condenser of known capacity are charged with the same pile. The deviations produced by the discharge of the two condensers are then compared. It is necessary to a ballistic galvanometer. In calling δ and δ', the deviations obtained by the respective discharge of the cable and condenser is had—

$$\frac{c}{c'}=\frac{\sin \tfrac{1}{2}\,\delta}{\sin \tfrac{1}{2}\,\delta'}=\frac{\delta}{\delta'},\text{ from which results } c=c'\,\frac{\delta}{\delta'}.$$

LOCATION OF UNDERGROUND LINES IN BELGIUM.

Brussels.—The underground lines constructed in Brussels unite the telegraph office of the north depot with the telegraph offices at the exchange, at the south depot, and Government offices. The line uniting the north depot with the exchange crosses the Place Rogier, Rue Neuve, Place de la Monnaie, Rues Fripiers, de la Fourché, du Marché aux Herbes, La Petite Rue au Beurre, La Rue au Beurre, Rue Mons, and terminates in the vaults of the exchange building. At this place it is united with the line going to the south depot by the Rue du Midi, Avenue du Midi and Place de la Constitution. At the bifurcation of the Rue Fripiers and the Rue Marché aux Herbes is a second junction with another line, which crosses the Rue de la Madeleine and terminates in the office at the ministry, Rue Villa-Hermosa. From the Place Rogier to the Place de la Monnaie (850 meters), the first of these lines is composed of seven cables, with seven conductors with casing. They are laid in Delperdange's conduit, divided by means of openings into sections of about 200 meters. From the Place de la Monnaie to the office at the exchange (474 meters) the line is built according to the German system. It is composed of seven cables of seven wires in metallic casing, laid in a brick trench. The openings are about 100 meters apart. The second line, laid between the exchange and south depot, is composed of two cables of seven wires in casing, joined in the opening place at about 130 meters from the exchange with two cables without casing, and laid in Delperdange's conduit. The length of this line is 1,350 meters. The third line, joined in the opening of Rue des Fripiers, is constructed according to the Delperdange system. It is composed of five cables with seven conductors, of which only one is used. The four others are cut—two at the entrance of the office of the ministry and two

at the opening placed in front of the Rue des Eperonniers. This last line has a length of 820 meters. The openings are about 200 meters apart.

Antwerp.—The underground line of Antwerp unites the office at the east depot with the office at the exchange. It goes along the Rue Van Schoonhoven, Rue de la Commune, Place de la Commune, the long Rue Neuve, Rue Puyren, and enters the Antwerp exchange by the little Rue des Claires. It is formed of seven cables of seven conductors in casing, of which three were laid in 1884 and four in 1887. They are constructed according to the German system. This line has a length of 1,290 meters, and is divided by means of openings into sections of about 120 meters.

Liege.—This line was laid in 1878. It unites the central office of Liege, in the Rue de l'Université, with the tunnel of Pierreuse. At this place it is united to the aërial line which ends at the telegraph office at the railroad station of Guillemins. The underground line is also constructed according to the German system, and is composed of two cables in metallic casing. It runs along the Rue de l'Université, Place du Theatre, Place Verte, and Places St. Lambert and Notyer. It measures about 750 meters in length; the openings are placed at 250 meters apart.

According to the figures mentioned above, the total length of underground lines in Belgium is 5,550 meters, including a line of 2,614 meters of seven cables, a line of 2,116 meters of two cables, and a line of 820 meters of one cable.

ESTIMATE OF COST.

The estimate of the cost of construction of a line of 1 kilometer with one cable having a metallic casing is as follows:

Description.	Cost.	Description.	Cost.
	Francs.		*Francs.*
Trial of cables	85.00	Tow (20 kilograms)	30.00
Preparation for 1 kilometer of cable	155.00	Serbat mastic (10 kilograms)	8.50
1 kilometer of cable at 2.57 francs per meter	2,570.00	Cost of trenching and laying cable	1,600.00
Nine openings at 100 francs each	900.00	Disconnection and connection of gas pipes.	20.00
Asphalted bands (40 kilograms)	66.00	Mason work	30.00
Asphaltum (20 kilograms)	3.00	Relaying pavement and carting away soil	450.00
Sand (15.3 meters)	24.00	Total	6,197.50
Bricks (16,000)	256.00		

There are no telephone or electric conduits in Brussels.

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Brussels, September 4, 1891.

DENMARK.

COPENHAGEN.

REPORT BY CONSUL RYDER.

The telephone company of the city of Copenhagen commenced to use underground cables of the well-known construction of Felton & Guillaume in the year 1885. These cables, which are protected by lead tubes of 3 to 4 millimeters in thickness, were partly placed in the ground in iron conduits of a description hereafter mentioned and protected by an outer armature of iron wires.

The iron conduits were made in two forms—a rectangular one (inner dimensions, 48 millimeters high by 96 millimeters wide) for eight cables (diameter 21 millimeters, twenty-seven wires) and a triangular one (51 millimeters by 51 millimeters) for three cables (one of 32 millimeters and two of 21 millimeters, twenty-seven wires). Both forms were made in two parts—the conduit proper and the cover—of a thickness of 5 millimeters. After the conduits had been placed in the ground the cables were laid down, the covers properly fixed, and the conduits made water-tight all over by the application of melted asphalt.

The total lengths of the conduits were 900 meters for eight cables and 1,300 meters for three cables. Of the cable protected by iron wires 3,500 meters were put underground.

These conduits did not prove a success on account of their small resistance against injury by pickaxes and the like. Where no such damage was done they have withstood corrosion in the ground, and are still found perfectly water-tight.

The mechanical injury done to the cables, which, of course, had to be repaired immediately, was a very serious drawback with these conduits. The company therefore decided to try other constructions. After a few trials with wooden conduits, the company finally adopted béton conduits, and in 1888 a length of about 600 meters for ten cables (32 millimeters diameter), each of fifty-two wires, were put underground. In 1890 a total length of about 1,000 meters of conduits was put down for eleven cables (same size as the last named), and at the same time about 500 meters of the eight-cable conduit named above were opened and the eight twenty-seven-wire cables also placed in the new béton conduits.

The béton (concrete cement) conduits have given satisfaction in every respect.

UNDERGROUND CONDUITS FOR TELEGRAPH WIRES.

The Government telegraph department avails itself only to a small extent of the underground conduits, namely, only for the line which leads from Copenhagen's main station, as well as for a few of the large telegraph stations through the cities, so as to reach the open country roads and railroads. The wires are in cast-iron conduits from 4 to 8 inches in diameter. The conduits are the same as ordinary gas and water pipes, with sockets arranged so that a loose socket is found at a distance of 160 feet, which is used for drawing in new lines, making repairs, etc.

The lines consist of copper wire of four fine wires (0.024 inch), insulated with gutta-percha to No. 6 legal standard gauge (0.192 inch). Seven such cores, each inclosed with tarred cotton yarn, are twisted together into a cable, which is protected by a layer of tarred tape surrounded with jute yarn, and on the outside with a layer of compound tape.

The length of the main conduits at present represents 7 kilometers, with about 137 kilometers of wires. In the near future the length of the conduits will be extended to about 11 kilometers, with about 450 kilometers of wires.

UNDERGROUND CONDUITS FOR ELECTRIC-LIGHT WIRES, ETC.

Underground conduits are, as a rule, not used in this city for electric wires, either for light or power, inasmuch as insulated cables are in use which are provided with an armature of lead and then with an iron lining—the so-called iron-hoop-covered lead cables of Siemens & Halske's construction.

These cables are put into the ground at a depth of about 0.7 meter. On the top of these cables a layer of sand of 7 centimeters is placed, and then a single row of brick on top of it. The bricks and sand serve only to call attention to the presence of the cables, so as not to damage them with pick-axes, spades, etc., in case of a later digging.

Only in a few streets in this city, namely, Ostergade, Kjobmagergade, and Gothersgade, as also part of Kongens Nytorv, are asphaltic lead cables used in place of the above-mentioned cables.

These cables are therefore laid in conduits of different sizes, made of concrete cement, according to the number of cables which are to be placed in them.

The conduits, as well as the covers, are made of concrete cement, consisting of one part of Portland cement and two parts of clean and rough sand. They are placed under the sidewalks, 315 millimeters from the curbstone and with the upper edge of the cover 255 millimeters under the sidewalk. In street crossings the covers are strengthened by inlaid iron bars of a diameter of 20 millimeters. The connections between the conduits are tightened with clay.

The cables are placed in the conduits, and these are then filled with clean sand and the covers placed on them. The filling with sand is to pre-

vent gas from penetrating. A hole 30 millimeters in diameter is at the bottom of each conduit to lead away any water which may penetrate.

The largest of the conduits cost, inclusive of placing and filling them with sand, about 13 kroner ($3.48) per meter.

HENRY B. RYDER,
Consul.

UNITED STATES CONSULATE,
Copenhagen, July 18, 1891.

FRANCE.

LYONS.

REPORT BY CONSUL FAIRFIELD.

The only arrangements in this district for placing telegraph or other electric wires underground, so far as I have been able to learn, are in the larger cities, and in connection with the sewers. Wherever sewers exist they are thus used.

Insulation is secured by covering the wires with gutta-percha. Rust is guarded against by using copper wire sometimes, and sometimes galvanized wire. To some extent the wires are encased in lead tubes.

They were formerly above ground. About five years ago, for the sake of avoiding the various dangers to human life, and also the greater danger of injury to the wires, they were removed to their present position.

As the telegraph wires belong to the General Government and the sewers to the cities, an arrangement had to be made with each city for the change. This was easily effected, and I am informed that the cities would not now consent to having them above ground, as formerly.

EDMUND B. FAIRFIELD,
Consul.

UNITED STATES CONSULATE,
Lyons, August 10, 1891.

MARSEILLES.

REPORT BY VICE-CONSUL BRANDT.

In the city of Marseilles there are no underground wires or cables for telephones or for electric power, nor are there any in the other cities of this district. All telephone wires are still overhead, on poles across the house tops or attached to the sides of the houses along the streets. Electric power is not distributed in any way in this district. The only underground conduits that come under this report are, therefore, those for telegraph and for electric light.

There are five cables (submarine) that land at Marseilles, three French and two English, and from the point where they touch the shore to the central telegraph office the distance is about 5 miles.

The French cables, being Government property, are laid down by the telegraph authorities, with the aid of municipal engineers, who indicate the locality and neighborhood of other underground conduits.

The English cables are laid down by the English cable company (the Eastern Telegraph Company), but before doing so the company must obtain

permission from the minister of the interior, through the minister for foreign affairs, and from the mayor of the city. The English officials then contract with some local man for the laying down of a pipe at about 4 feet from the surface of the street, through which they (the English telegraph officials) pull their cables and join them themselves. The cost of laying down this pipe amounts to 5.50 francs per meter (about $1 per yard). The pipes generally used are old, iron gas pipes, usually coated with asphalt, and the cables themselves are insulated with rubber in the usual way. The English company, of course, have to guaranty that they will put the roads, streets, and pavements back in the same state of repair as they found them before laying their cables.

Wires for electric lighting are laid by the electric-light company in this city the same as the gas company, and, being a French company, only has to act in accordance with the permit obtained from the mayor of the city. These wires are laid in identically the same manner as the telegraph cables, but the cost is from 10 to 20 per cent more, because of the greater difficulties experienced in the more important and crowded streets where the electric light is used, and also from the fact that these wires are chiefly laid under the sidewalks, and necessitate many joints and breaks.

ALEXANDER BRANDT,
Vice-Consul.

UNITED STATES CONSULATE,
Marseilles, October 7, 1891.

NANTES.

REPORT BY CONSUL DE SALLIER-DUPIN.

For the following I am indebted to the courtesy of Mr. Cordelier, general agent of the Société anonyme pour la transmission de la force par l'électricité, at Nantes.

PRELIMINARY REMARKS.

The consular district of Nantes is not rich in underground conduits for telephone, telegraph, and electric-light wires, and in this report I can only describe the underground conduits for the electric-light. Those for telegraph and telephone being Government property, the authorities in each of the seven departments which compose the consular district of Nantes refuse positively to give information.

The principal underground conduits are in this city, where the electric light is being introduced by an independent company, incorporated under the name of Société anonyme pour la transmission de la force par l'electricité, said company having a capital of 3,500,000 francs.

The work of laying the cables and wires will not be completed for some time. According to the contract of the company with the city, 18 kilometers of wire must be laid within two years from the date of contract.

On the 17th of January, 1892, two of the principal streets of the city, together with the opera house and some principal cafés and stores were lighted for the first time by electricity.

SYSTEM OF ELECTRIC POWER.

The system of electric power employed by the Société anonyme is one of continuous current, with accumulators, from whence, by means of wires, the force is distributed in different directions.

The electric motor is now of 120-horse power, to which the work of adding 240 horse power is in progress.

The electric plant contains three generating multiplicator dynamos, patented by Deroziers and manufactured by the Brequet house; three vertical machines with stampers, giving each an initial pressure of 10 kilograms; and three boilers, semitubular form, the tubes of which present a heating surface of 78 square meters.

From the motor the electric current is conveyed to two accumulating stations, with an electro-motive force of 330 volts. These accumulating stations are composed of one of 134 elements of 800 kilograms, the other of 134 elements of 400 kilograms. The utility of these accumulators is very great. The principle is this: The electricity is sent directly from the plant to the above stations by means of cables, having a section each of 800 square millimeters; these stations are virtually reservoirs for electricity, whence it can be furnished whenever repair is necessary in any part of the machinery at the plant and light is required at the same time. The accumulators are of the Laurent Celly pattern, and are manufactured by the Société du travail electrique des Métaux (department of the Seine).

DESCRIPTION OF CABLES AND WIRES.

The cables and wires are made of siliceous bronze, manufactured by the firm of Lazare Weiller, of Angoulême. Their section varies from eight-tenths of 1 square millimeter to 1 square millimeter, according to the amount of current each must furnish. The two principal cables are classified as follows: (1) Feeders, which convey the current from the plant to the accumulators; (2) distributers, which receive the current from the accumulators and transmit it in all directions. The weight of the cables varies in proportion to the diameter, and the price per 100 meters is from 2.25 to 2.50 francs.

The naked cables and wires are entirely isolated, being placed upon porcelain insulators; the porcelain is soldered to the cast-iron supporter with sulphur; the bases, which are made in the form of a cross, are cemented in béton; and the wires are fastened to the porcelain with galvanized-iron staples.

The laying of the cable and wire on the insulators is done by hand at a cost of 1 franc per meter. This price is the same for all sizes. For a current of high intensity, ordinary porcelain in the underground conduits is a sufficient

insulator, but in parts of the city where, at certain seasons of the year, there is danger of the naked cables being submerged in the conduits, the latter are replaced by tubes coated with bitumen, called "Tuy aux Chameroy," from the name of the inventor. The cables and wires, having been previously covered with rubber and gutta-percha, are placed in the tubes, and are thus preserved from all moisture.

DESCRIPTION OF UNDERGROUND CONDUITS.

The base and sides of the underground conduits are of béton, made with Portland cement; the upper part is of schistose flagstone, cemented together with vassy cement. These conduits are laid either under sidewalks or beneath the pavement, according to circumstances; in either case the dimensions are the same, the only difference being that under the sidewalks they are placed at a depth of 150 millimeters, while beneath the pavement the depth is increased to 600 millimeters. This is a precautionary measure, to avoid injury to the schistose flagstone arising from the continuous pressure and movement of carriages and trucks. The same rule is observed for the laying of the Chameroy tubes. The conduits are all laid on an inclined plane, to permit the water to drain in the city sewers. At distances of about 40 meters these conduits are provided with manholes, easily opened, being covered with round cast-iron plates. These manholes are made to facilitate the keeping in order of the conduits, the repair of the wires, and to rectify any irregularity.

The dimensions of the conduits vary according to the number of cables and wires which they contain. The first conduit is called the primary canalization, and contains two feeders leading from the plant to an accumulator. It measures outside 470 by 420 millimeters; inside, 310 by 260 millimeters. A conduit with three wires measures outside 470 by 400 millimeters; inside, 310 by 240 millimeters. A conduit with six wires measures outside 630 by 470 millimeters; inside, 470 by 310 millimeters. Another conduit with six wires measures outside 580 by 470 millimeters; inside, 420 by 310 millimeters. By this it can be seen that in all cases the wall, the base, and the schistose flagstone measure 80 millimeters.

The price of building the conduits is from 1,800 to 2,500 francs per 100 meters, according to type, nature of soil, and depth.

LAMPS.

The lamps are of the Lyo Bardon system, and are manufactured by the inventor himself. Incandescent lamps of the Cruto system, and also a few lamps of the Grebriel system, are used. The strength of the lamps varies from 3 to 12 ampères. Those used in the streets are of 8 ampères; they are suspended at a height of 5½ meters. In buildings where the electric lamps are used the current is furnished by three wires of a capacity of 220 volts.

The price of the electric light is 12 centimes per hectowatt.

OTHER CITIES.

The city of Tours is almost entirely lighted by electricity. The wires are in part suspended and in part placed in underground conduits, which are identical in system to the one employed at Nantes.

The cities of Châteaulin, St. Brieuc, St. Nazaire, Hennebont, and Saumer are partially lighted by electricity. In all those cities the wires are suspended in the air.

H. DE SALLIER-DUPIN,
Consul.

UNITED STATES CONSULATE,
Nantes, March 16, 1892.

ROUEN.

REPORT BY CONSUL WILLIAMS.

At Rouen the wires are carried in the air. The telephone wires of iron and the electric-light wires of copper, both uncovered and supported on porcelain insulators, are attached to the sides and the roofs of the houses in the most primitive form.

INSTALLATION OF ELECTRIC LIGHTING AT ROUEN.

The electric lighting in Rouen commenced in 1886, the motive power then being two portable engines. The originator of the company was Mr. Lecordier. In 1888 it was turned into a company, and the portable engines were replaced by the well-known Armington Swiss engines, constructed by Mr. Thomas Powell, of this city. At present the company has four 70-horse-power engines at work and are about to increase considerably their plant; the delay in doing so has been due to the difficulty of finding suitable ground.

The number of incandescent lamps now daily lighted is about 2,800, of 10 and 16 candle power, and are divided thus: One hundred and thirty-three lamps which are turned off at 10 p. m., 1,060 which are turned off at midnight, and 410 which are turned off at 2 a. m.; besides these there are about 12 arc lamps of 3 to 6 ampères.

The wires are carried in the air over the house tops. They are of red copper, uncovered, and the supports are of porcelain.

The system adopted for the payment of the lights is by an annual fixed sum. The first category, lighted to 10 p. m., pays for the 10-candle lamps 62.30 francs per annum, and for the 16-candle lamps 81.10 francs; the second category, lighted up to midnight, pays for the 10-candle lamps 75.10 francs per annum, and the 16-candle lamps 97.90 francs; and the third category, lighted to 2 a. m., pays for the 10-candle lamps 87.90 francs per annum, and the 16-candle lamps 114.90 francs. The subscribers have the right to have their lamps lighted half an hour before sunset. Payments are made monthly and in advance.

Each subscriber makes a contract with the company for five years, in consideration for which the company makes the connections and replaces the lamps which burn out during that time. This contract price covers the installations, wear and tear, and supply of the current. The decorations of the lamps, chandeliers, shades, globes, etc., are paid for by the subscribers.

Up to a year ago the system of wires was the ordinary double line—supply and return wires; since then the three-wire Edison system—a supply and return wire and compensating wire—has been adopted, which has permitted the company to double the potential of the current and to work at 240 volts.

The four dynamos employed are the Edison shunt dynamos, and each one distributes supplies every evening—a current of 350 ampères at 120 volts (4,200 watts) for each machine. They are arranged, grouped for the three-wire system, by twos and connected in tension. Each dynamo has its own engine, which runs at two hundred and seventy-five revolutions per minute.

The steam is supplied to the engines at a pressure of 100 pounds per nine-tenths of 1 inch de Neyer, evaporating 4,500 kilograms of steam per hour. The steam from a general collector passes into a steam superheater system, and is superheated to 235° C. (365° F.). The steam superheater has proved of great utility in economizing the steam and coal and preventing accidents, which had occasionally occurred from water carried over into the steam cylinders.

Between the poles of the dynamos and the main line the current passes through four batteries of accumulators (Tudor system). Each battery consists of 63 elements, and has an output power of 1,000 ampère hours. To permit the working tension of 240 volts, the four batteries, like the four dynamos, are arranged by twos and coupled in tension. The total capacity is 2,000 ampère hours. The arrangement of the accumulator distributer wires permits changing more or less quickly by disposing the batteries in two or three parallel series, or passing direct a certain number of elements in the main or inner line to keep up the tension of 240 volts, or to pass the current of one group of two dynamos with the main line, while the other group supplies direct to the accumulators; and the main distributer permits either line to be supplied to 10 p. m., midnight, or two hours after if desired.

The wires from the distributing table pass up the boiler chimney, and from the chimney spread out in different directions.

The incandescent lamps employed are the Swan-Edison, the Grebriel lamp, the Pilsen arc lamp, and the Puteaux arc lamp. For two years the company employed exclusively the Girard lamp, an incandescent lamp in which the filament is made of powdered coke and an agglomerating material impressed; it gives an excellent light, and has the advantage of resisting a tension of double its normal voltage for one time without being destroyed.

The lamps employed were of 20, 25, and 33 volts, grouped for a potential of 100 volts by five, four, and three lamps, a disposition which has the disadvantage of the whole group of five, four, and three lamps giving out if one gets destroyed, and for this reason they were replaced by the lamps named above. This lamp lasts 1,000 to 1,100 hours, where, under similar conditions, the Swan-Edison and Grebriel lamps only last 780 to 825 hours.

The lamps of 20 volts consume 3.6 watts per candle power, those of 25 volts consume 2.8 watts per candle power, and those of 33 volts consume 2.7 watts per candle power.

The lamps were sold a year ago at 3.25 francs to 3.50 francs each, but the other system of lamps has been so much reduced in price that the Girard can not compete with it.

The society was formed in 1888 with a capital of 200,000 francs, increased to 500,000 francs in 1889 by an emission of shares of 500 francs each. The company has no monopoly, but has a concession from the town for fifteen years for the right to light a certain portion of it, for which they pay the city 20 per cent of the gross proceeds.

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, August 24, 1891.

GERMANY.

REPORT BY CONSUL-GENERAL EDWARDS, OF BERLIN.

The length of the great underground telegraph lines in the imperial German telegraph system at the end of March, 1888, was 5,630 kilometers, with 38,009 kilometers of wire. At the end of March, 1891, it was 5,847 kilometers, with 39,532 kilometers of wire.

The underground lines have experienced an important extension through the connection of the South German kingdoms with the underground net of the German imperial telegraph system. In the year 1889 an underground connecting line was laid from Carlsruhe, in Baden, via Pforzheim and Enzberg, to Stuttgart, the seven-wire telegraph cable of the construction adopted by the imperial telegraph department being used. This line has a length of 38 kilometers in the territory of the imperial telegraph department, that is, from Carlsruhe to the Baden-Würtemberg frontier, near Enzberg, and of 42 kilometers in the Kingdom of Würtemberg, altogether 80 kilometers. The part of this line within its own territory is managed by the imperial telegraph authorities, while the part in Würtemberg is under the management of the royal Würtemberg telegraph department. The total cost amounted to about 200,000 marks for each party. By means of the underground line Berlin-Frankfort-Carlsruhe, which already existed, there is now an unbroken subterranean telegraph connection between Berlin and Stuttgart.

In the fiscal year 1890 the completion of an underground telegraph line from Dresden, via Hof and Nuremberg, to Munich was undertaken. First, the line in the territory of the imperial telegraph department from Dresden, via Freiberg, Chemnitz, Zwickau, Reichenbach, and Plauen, to the Saxon-Bavarian frontier near Hof was begun, and this stretch was satisfactorily completed at the beginning of December, 1890. The length of this line, in which likewise a seven-wire cable was used, amounts to 177 kilometers. Greater difficulties were encountered in laying the line through the Saxon Erzgebirge (Sudetic Mountains) than have ever before arisen in the history of underground-cable laying. The work was delayed in many places by encountering masses of hard rock—gneiss, greenstone, quartz, hornblende, and porphyry of the hardest sort—directly in the line of the cable trench, reaching often close to the surface in unusual masses. It was, therefore, found necessary to blast with dynamite about 12,000 meters of trench. The difficulties of the undertaking were in a high degree increased (1) by the necessity of laying the cable through a number of large towns with extended gas and water pipe nets, below which the cable had to be laid; (2) by the unfavorable weather in the late fall; (3) by the floods between Plauen and Hof; and (4) by the early freeze and heavy snowstorms. In spite of all this, how-

ever, the work was finished at the beginning of December, 1890. In the spring of 1891 work was begun on the connecting line Hof-Nuremberg-Munich, 327 kilometers long, in the Kingdom of Bavaria. In this way underground telegraphic connection was obtained between Berlin and Munich, via Dresden. The cost to the imperial telegraph department of the line from Dresden to Hof was about 1,200,000 marks. The line from Hof to Munich cost the Bavarian Government about 2,000,000 marks.

The decision of the royal Bavarian and Würtemberg governments to connect the underground nets of the imperial telegraph system was received with great satisfaction. By this connection not only has a business need which has long been felt been accommodated, but a telegraphic connection of the principal capitals of the Empire has been secured in an underground way, which is independent of outside influence and is safe under any circumstances. In this sense the underground net of the imperial telegraph department has a permanent value.

For securing such telegraphic advantages on the southwestern frontier of the Empire it has been decided to lay an underground telegraph line from Strasburg to Mulhausen, both in Alsace, and an appropriation for the purpose was made in the estimates for the fiscal year 1891–'92 to the amount of 750,000 marks.

With the construction of underground lines in the larger towns, instead of the overhead lines, which are often disturbed by street traffic, there has also been progress in the past three years, the sum of 1,008,150 marks having been expended for the purpose. It is intended to introduce in the larger towns of the Empire, in like manner as in Berlin, nets of underground cable canals and cable tubes, which permit the increase of underground communication in the easiest way. The repeated breaking open of streets, etc., will thus be avoided.

The Berlin cable tube for telegraph wires has continued to accommodate the new cable necessary for the increase of connections, so that this increase has been obtained without any difficulty and to the prompt satisfaction of the need.

The underground town lines, just as the cable lines through tunnels and rivers, are to be regarded as connecting links of the overhead-line net, and their lengths are included in the statistics of the overhead net.

W. H. EDWARDS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, February 1, 1892.

BERLIN AND HAMBURG.

REPORT BY CONSUL-GENERAL EDWARDS.

The burdening of roofs with overhead telephone lines had reached such a degree in some large towns, especially in Berlin and Hamburg, that the exclusive use of this method, even with constructions accommodating wires in large numbers, seemed no longer possible. It was therefore necessary in the municipal telephone nets of these places to lay cables for the telephone business, and for this purpose, in view of favorable experiments which had been made with cable tubes, to construct a net of underground pipe lines.

These underground accommodations for the telephone business were completed principally in the years 1888–'90 in Berlin and Hamburg, after serious and protracted negotiations had been carried on with the municipal governments of those cities concerning the use of the municipal streets for the purpose, and after (with the aid of certain German cable factories, by experiments, alterations, and improvements) it had been found possible to manufacture a telephone cable which satisfied the special demand arising from the uniqueness of the telephone business.

By the construction of underground telephone lines in Berlin the telephone net of that city—which German authorities claim to be the greatest in the world—was so perfected that for a great many years to come the unobstructed development of this business is guarantied. The underground system finds its natural knot points in the telephone offices; thence the pipes branch out partly towards the other offices and partly towards the so-called cable-end points. At the latter points the nine telephone cables in the pipes, each of which contain twenty-eight wires, are connected with the overhead net. The pipe system has a total length of 34 kilometers. For this purpose 42,083 meters of cast-iron normal-socket pipes, with an interior diameter of from 20 to 40 centimeters, have been used. The largest pipes can accommodate as many as ninety cables, that is, two thousand five hundred and twenty wires. The entire weight of the pipes amounts to 4,545,746 kilograms. Five hundred and twenty-two walled cable wells permit access at any time to the pipes. Furthermore, at especially difficult points (street crossings, etc.) 100 meters of wrought-iron boxing have been laid and 135 meters of masonry canals constructed. The Spree and the ship canals are spanned by 212 meters of iron cable boxing at different points.

The increase of the cables in the pipes is regulated by the demand. Within a year six thousand three hundred and eighty-four wires, with a total length of about 3,685 kilometers, have been laid in pipes. The construction cost of the underground telephone system in Berlin has amounted to about 1,500,000 marks, the expense being met by special appropriations.

The extent of the underground telephone net in Hamburg is naturally much smaller than in Berlin, but it is in general based on the same plan. The length of the pipes and iron boxings amounts to about 7 kilometers, the

length of the cable laid therein being about 40 kilometers, with 1,120 kilometers of wires.

Up to the present the amount expended has been about 400,000 marks.

A further extension of the underground net in Hamburg is now being made. It is also intended to lay underground telephone lines in other cities in the imperial telegraph district in which they seem to be needed.

W. H. EDWARDS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, February 1, 1892.

BREMEN.

REPORT BY CONSUL STARKLOFF.

All wires for telephones in the city of Bremen are overhead, and consist of zincked iron wire 2.5 millimeters in diameter and of bronze wire (silicum) 1.5 millimeters in diameter.

One underground conduit telegraph cable of the German Reichs telegraph leads through the city of Bremen. The cable lies 1 meter deep and consists of seven veins, each of them composed of seven twisted copper wires, which are insulated by caoutchouc and jute thread. This cable is enveloped in an iron wire protection, consisting of twenty strong iron wires (4 millimeters) and covered with a layer of asphaltum. The diameter of the cable, inclusive of the cover, is 33 millimeters. The length of the cable running through the Bremen state is about 10 kilometers.

There is only one underground electric-light conduit (state property), furnishing light to the warehouses, dwellings, streets, and yards of the Bremen free port (*Freihafen*). The cable runs partially in cemented brick tunnels and partially in iron cases. The cable consists of insulated copper wire. Four dynamos furnish the electricity, with a power of 120 volts and about 2,200 ampères.

In Geestemünde, 30 miles from Bremen, there exists one private underground electric-light conduit. The cable consists of insulated copper wire, and runs in an iron case. Two dynamos furnish electricity of 150 volts and about 360 ampères.

There is one electric car line of the Thomson-Houston system in course of construction. The electricity is produced at a central station. The leading current conduit is overhead and the returning current conduit underground. The latter is situated between the rails, consisting of clear copper wire 4 millimeters in diameter. The current is about 500 volts. The whole length of the car line is about 8 kilometers.

HUGO M. STARKLOFF,
Consul.

UNITED STATES CONSULATE,
Bremen, December 21, 1891.

COLOGNE.

REPORT BY CONSUL WAMER.

The only underground wires at present in this district are those for telegraph and electric light. The telegraph cables in the country are laid loosely in the ground about 1 meter below the surface; in the cities they are laid in iron boxes, with openings at different places so that they may be readily got at in case of repairs, etc.

The electric-light cable, which is just being laid in Cologne, is about 3 feet under the sidewalks in wooden boxes. The cable is covered with asphalt, which was poured over it in a molten state in the boxes.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, October 24, 1891.

DRESDEN.

REPORT BY CONSUL PALMER.

The imperial telegraph and telephone administration has the exclusive monopoly for the telegraph and telephone service throughout the entire Empire of Germany.

In the Kingdom of Saxony there are at present long underground cables only for telegraphing. In Dresden and vicinity there are as yet no underground conduits for telephone, electric-light, or power cables. The subject is under discussion, but none have been laid so far.

The telegraph cables consist of seven conducting wires. These wires are of pure copper, and are covered with double layers of the best gutta-percha. The spaces between the isolated wires are filled with jute yarn, in order to obtain a smooth surface of the cable. As a protection against rodent insects, pressure, etc., the cable runs through a casing of galvanized-iron wires. These wires vary in diameter according to whether they serve to protect a river or land cable; the casing is very much thicker and stronger for river cables, as the cable must be protected against ice and anchors that may be dragged along the bottom of the river.

Underground cables are laid at a depth of 1 meter, which has proved to be sufficient to protect the insulating coating of the cables. They are almost universally laid under the sidewalks in Dresden, and care is taken to avoid too close a contact with gas pipes or cement mortar, as it has been found that gas and cement destroy the gutta-percha coating and imperil the cable itself. Usually a simple ditch is dug, and the bottom carefully smoothed and all stones removed. The cable is then laid in it (covered over with hard-burned bricks when there are other pipes in the neighborhood) and the

ground filled in. In streets with heavy traffic the telegraph cables are run through cast-iron pipes when it appears probable that the number of cables will be increased. In such cases the pipes used are of considerable diameter, in order to facilitate the work when additional wires are to be drawn. This work offers great difficulties, especially when the conducting pipes run in curves or are not exactly horizontally laid down. The openings serving to draw the wires through the pipes are of brick masonry, and are situated, when the pipes are straight, from 200 to 300 meters from each other; if the pipes run in curves, the openings are, according to the radius, closer together.

Where electric light is used, it is made by individual plants of the consumers, and the Monier system is generally preferred.

AULICK PALMER,
Consul.

UNITED STATES CONSULATE,
Dresden, July 25, 1891.

FRANKFORT.

REPORT BY CONSUL-GENERAL MASON.

Germany was one of the first of European countries to adopt on a large scale the principle of subterranean cables for telegraphic purposes. As early as 1848–'49 experiments in that direction were undertaken by the Prussian government; but, owing to the defective methods of insulation then practiced, the early essays proved abortive. The cables were not laid sufficiently deep, the sulphur with which the gutta-percha insulating material was impregnated affected the wires unfavorably, and sufficient precaution was not taken to protect the wires from injury at road and river crossings. In 1852 a second experiment was made, in which the wires were inclosed within leaden pipes; this proved not only expensive, but defective. Thus the matter was left for nearly twenty years, during which period experiments were made in France and England, which finally developed such favorable results that in 1875 the Imperial German Government, which had meanwhile become a great, united military power, sent a commission of experts to examine the English and French methods. This commission reported so favorably that the chief of the bureau of posts and telegraphs at Berlin asked for and obtained in the Reichstag of that year an appropriation to build an experimental underground telegraph line 100 miles in length from Berlin to Halle. This line proved entirely successful, and was, as soon as possible, extended westward to Cassel, Frankfort, and Mayence, while another line was laid from Berlin northward to Hamburg, Altona, and Kiel. The system was rapidly extended so as to connect the capital with all the principal cities in the German Empire. These lines now aggregate 5,847 kilometers, in which are laid 39,532 kilometers of wire.

The first telegraph cables laid in Germany were made in England, but as soon as the success of the first two or three lines was demonstrated, a scien-

tific commission was appointed to devise a standard form of cable for Government use, and, this having been done, the contract for the entire supply was divided between two firms—Siemens & Halske, of Berlin, and Felton & Guillaume, of Cologne, who have since furnished all cables used by the imperial telegraph bureau.

The standard German telegraph cable for land service contains seven conductors, each of which is composed of seven copper wires six-tenths of 1 millimeter in diameter and twisted lightly into one cord. These conductors are enclosed in two layers of Chatterton's compound, the first layer of which envelops the wires and the second is inclosed between two layers of gutta-

percha. The group of wires, thus insulated, is surrounded by a protective envelope of sixteen galvanized iron wires 4 millimeters thick, each wire being wound on so as to make a complete circuit of the cable in about 10 inches of its length. The cable is then coated with pure coal tar, free from creosote, and is again covered with asphalt when laid in the trench, which is not less than 4 feet in depth. At river crossings and where the lines are laid through bays or harbors a larger cable of similar construction is used. The standard cable is manufactured in lengths of 1,000 meters, and in laying them down great pains are taken to secure perfect connections, by means of careful soldering and insulation.'

The cost of construction of underground telegraphs in Germany averages $181 per kilometer, equal to about $289.60 per mile. This is nearly or quite four times the cost of overhead wires; and underground cables have the further disadvantage of being much less perfectly insulated than those stretched in the air, and therefore require more delicate instruments for rapid and successful working. On the other hand, it is held that a well-made and properly laid underground cable is practically indestructible and should last indefinitely, with little or no expense for repairs. Moreover, to a military nation like Germany, surrounded by countries with which the Imperial Government may sometime find itself at war, an underground telegraph system is of the first importance, and this was the original consideration which prompted its early adoption in this country.

For certain reasons, which may be briefly stated, Germany has not yet advanced beyond the experimental stage in the use of subterranean conduits for electric lighting, power, telegraph, and telephone wires. Taking Frankfort as a fair example of the larger and most progressive German cities, we find here the telephone wires strung, not through the streets upon poles, but high overhead upon iron frames and posts projecting above the roofs of

the tallest buildings. There is no general system of electric lighting or power distribution in use here. Wherever electricity is used for these purposes in Frankfort it is made by a plant on the premises, so that the question of transmission is but slightly involved. The telegraphs belong to the General Government, and all telegraph wires are laid underground in the form of cables within the corporate limits of Frankfort and most other German cities. These underground connections are being constructed in the smaller cities and villages, so that a telegraph pole is rarely seen within a municipality in this part of Germany.

All the cables used for this purpose are made, as has been stated, by two great German manufacturers, who also supply electrical apparatus for the imperial navy, as well as field telegraphs for army purposes. Through either interest or conviction, or both, these manufacturers are opposed to subterranean conduits for electrical purposes. All such conduits are considered by them as costly, troublesome to construct, and, in view of the proved excellence of buried cables, unnecessary. This judgment has so far prevailed hitherto that Frankfort has made no formal experiment with any conduit system, and the only information that can be gathered here on that subject must be sought for in the International Electrical Exposition, which is now in progress, and at which there are on exhibition three forms of conduits which attract great attention and are considered to represent the best that have been devised for cities which have not, like Paris, a system of large, airy sewers, through which wires and cables may be strung, secure from dampness or other disturbing influences. These are as follows:

The Bergmann conduit.—This is an American invention, and is exhibited by the Bergmann Manufacturing Company, of New York city, through its agency and newly established manufactory at Berlin. It consists of a U-shaped cast-iron trough 15 inches deep by 1 foot in width, in which are set at intervals of a yard transverse sections or plates of gray earthenware, pierced with holes of the requisite number and size to receive the tubes which that particular conduit may contain. The trough is made in lengths of about 6 feet, with joints which fit together readily, thus forming a continuous iron channel of any desired length. This having been properly set in the bottom of a trench, the perforated cross sections are put in and the tubes introduced. The tubes are of papier-maché, which has been treated inside and outside with hot asphalt until the tube has become stiff, smooth, and impervious to moisture on cooling. The tubes are run in and their joints firmly spliced by an ingenious device, and the trough is then poured full of molten asphalt, which hardens around the tubes, encasing them in an imperishable matrix. The trough is covered with overlapping iron plates a yard in length, which are also smeared with and set in asphalt. The whole is buried about 3 feet beneath the surface, and is divided into sections from 50 to 200 yards in length by manholes, which enable the operators to insert or take out the wires, regulate connections, etc. The tubes vary in number, according to size, from four to twelve in each trough, and they are adapted to cables or

insulated wires of all sizes for lighting, power, telegraph, or telephone uses. This system is probably well known in America, but is new here. An experimental line has been laid down in Berlin, and a section is in use at the exposition to conduct the electric-light wires between the machinery building and the principal restaurant, a distance of about 200 feet. The advantages claimed for it are indestructibility and absolute imperviousness to moisture or gases.

The Monier system.—This is a French invention, by which troughs, pipes, etc., for underground uses are made by spreading cement over light frames of iron wire netting, which hold the mortar in position until it hardens, thus producing sewer pipes and other forms of extraordinary lightness and cheapness. The application of the Monier process to electrical conduit purposes is by two methods. The first of these is by the construction of large, cylindrical pipes, 4 or 5 feet in diameter, which, when laid down, form subterranean tunnels or galleries, through which electric wires may be strung upon ordinary insulators attached to the sides of the pipe the same as to masonry.

Another form of the same system is exhibited by Naglo Brothers, of Berlin. It is a square box or trough made by the Monier process of cement upon iron frames and closed at the top by a lid or cover made of slabs of the same material. It is laid in the ground like an ordinary sewer, and is set with porcelain conductors resting on iron supports and in which are slots or notches to receive the conductors, which are simply bars or strips of copper 1 inch wide by three-eighths of 1 inch in thickness. This system is used for lighting and power conductors only, though it might be applied to telegraph or telephone cables as well, and is adapted mainly to dry situations, where the conduit is not liable to serious invasion by water. This conduit is used at the exposition to inclose two heavy copper rods which serve as conductors for a powerful electric current between a large dynamo in the main building hall and a rotary pump and other apparatus at the marine department of the exhibition, on the river bank, 400 or 500 yards distant.

It is highly probable that one of the results of the present display and consequent awakening of public interest in respect to electrical science will be to bring the whole subject of subterranean conduits into much greater prominence than it has hitherto attained in Germany.

The Electro Technische Zeitschrift, the organ of the Electro-Technical Society and a leading authority on all electrical topics, has given the Bergmann system a lengthy and favorable review, and recognizes the fact that subterranean conduits are a necessary adjunct of electric lighting and power transmission, and that Germany must follow the lead which the United States, England, and even Italy have taken with such favorable results.

FRANK H. MASON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort, July 10, 1891.

HAMBURG.

REPORT BY CONSUL JOHNSON.

In Hamburg there are three classes of underground conduits for electrical purposes, viz, (1) conduits of the imperial telegraph department, (2) conduits for fire-alarm purposes, and (3) conduits for illuminating purposes.

The wires of the imperial telegraph department, and especially those used for telegraphing purposes, have heretofore been simply embedded in the ground, without any further protection to the cables than a covering of brick. For the future it is, however, intended to relay these wires in the same manner as those of the underground telephone system. These, for the past two years, have been placed in iron pipes, the cables consisting of numerous wires, with iron armatures. This manner of laying the wires makes an enlargement of the whole system a comparatively easy matter, the new cables being placed beside the old ones without necessitating the tearing up of the streets. This is done by means of wells sunk upon the pipes at a distance of about 800 feet from one another. In this way the cables can be drawn through the pipes in a straight line from one well or manhole to the other. At street corners the cable is run through a horizontal pulley.

Heretofore the fire-alarm wires were laid in the same manner as those of the imperial telegraph department, but in future are to be likewise better protected. They are to be laid in ⌴-shaped canals, made of rolled iron and provided with covers of flat iron.

The wires for electric-light purposes are inclosed in leaden cables, which are conducted through similar canals as above, the covers being manufactured either of cast or wrought iron.

No electric-power cables exist in Hamburg.

All cables, with the exception of those of the fire department, are laid under the sidewalks.

The greater number of the telephone wires are conducted overhead, the poles being manufactured of cast iron, which are fastened upon the house tops.

CHAS. F. JOHNSON,
Consul.

UNITED STATES CONSULATE,
Hamburg, September 19, 1891.
No. 139——12.

THE NETHERLANDS.

ROTTERDAM.

REPORT BY CONSUL GARDNER.

I have the honor to submit a letter relating especially to the telegraph service in the Netherlands, which, upon request, has been prepared by Hon. R. K. Van Eldik, director of the Government telegraph, as follows:

The total length of underground wires in the Netherlands is about 150,000 meters (1 meter=39.37 inches). Of this total more than 17,000 meters are laid in iron tubes, more than 10,000 meters in asphaltum tubes, about 1,500 meters in earthen pipes (clay), and quite 120,000 meters in cables. These various underground wires serve exclusively to connect the Government telegraph stations in cities—in the smaller cities as well as in the large ones—with the aërial wires in use throughout the country districts.

At first iron tubes only were made use of. These had a length of 1.9 to 2.7 meters each, and an inside diameter of 50 to 76 millimeters (1 millimeter=0.039 inch). Into these tubes were pulled wires of copper, above 1 millimeter thick, covered with a double coating of gutta-percha.

In a few cities asphaltum pipes have been laid; more rarely still, earthen pipes are used. In both of these the wires, covered with gutta-percha, are placed in the same manner as in the iron tubes.

Though these different kinds of conduits in pipes are still employed in many places, they are no longer renewed, because of the many serious faults which their use has revealed; as, for example, the wires attach themselves to the outside iron pipes by rust, the gutta-percha is dissolved, and the asphaltum and earthen pipes are often and easily injured and broken.

About thirty years ago another system was first employed in the Netherlands, to wit, the underground cable. This system is the only one now applied. The cable consists of a copper wire 1½ millimeters thick, encased in one or two coverings of gutta-percha. Then follows a covering of hemp drenched in tar, the whole being protected by thick iron wires, which, spiral-like, are wound around.

The conduits contain one, three, four, five, six, seven, and, not infrequently, fourteen cables, and are buried in the ground at a depth of 75 centimeters, having no other protection than the top covering of earth. Cables carried under the water, however, are laid in furrows previously dug into the bottom, and are afterwards closely filled up, or, in some instances, incased in iron pipes about 28 centimeters in length each.

Little can be written with certainty about the duration of underground wires in the Netherlands. While aërial wires are too often damaged by storms, sleet, frost, or thunderbolts, the underground wires are not thus exposed, and suffer only from aërial electricity when their ends are connected with overhead wires. They are exposed also, though but seldom, to injury from street operations in connection with gas and water works.

The above statement by Director Van Eldik covers substantially the information relating to underground conduits obtainable in this consular district. Electricity for lighting is far less used in the Netherlands than in the

United States, carrying cables for that purpose being scarcely needed; and for power purposes electricity is not transmitted at all, so far as I have been able to obtain information.

WALTER E. GARDNER,
Consul.

UNITED STATES CONSULATE,
Rotterdam, July 10, 1891.

ITALY.

FLORENCE.

REPORT BY CONSUL LONG.

Through the manager, Gennaro Placci, consul of Colombia and vice-consul of Mexico, I am informed that the telephone company for central Italy, with an office in Florence and branches at Bologna and Leghorn, does not, at the present time, use any underground conduits for telephonic communication.

No underground conduits for electric-light wires worthy of mention are as yet in use in Florence. The limited number that have been introduced for experiments in the streets of the city do not give much satisfaction.

J. V. LONG,

UNITED STATES CONSULATE, *Consul.*

Florence, July 30, 1891.

MILAN.

REPORT BY CONSUL PEPPER.

The Società Generale Italiana di Elettricita, Sistema Edison, under the direction of Mr. J. W. Lieb, a prominent American engineer, possesses in Milan three workshops.

(1) A workshop, exclusively for private service, containing the steam motors and dynamo electric machines, the steam boilers, etc. The ten boilers, manufactured by Babcock & Wilcox, Glasgow, are each of a heated surface of 190 square meters, with a pressure of 8½ effective atmospheres Every boiler can normally develop 165-horse power, and they are fed by two Esslingen pumps or by ten Kerting injectors. There are seven Armington-Sims motors of 150-horse power each, at a velocity of 350 turns, commanding directly the Edison dynamos. There are also three Porter-Allen motors of 150-horse power and 350 turns, commanding directly Edison dynamos, and two Ganz motors of 150-horse power each, at a velocity of 250 turns, in direct connection with two Ganz dynamos of alternate currents. There is one compound Armington-Sims motor of 100-horse power, which, at a speed of 250 turns and by means of two link belts, keeps in motion two small Edison dynamos. The dynamos are ten Edison dynamos of 750 ampères each at 115 volts, two Edison dynamos of 240 ampères each at 125 volts, and two Ganz dynamos of alternate currents of 40 ampères and 2,000 volts. The workshop feeds fifteen thousand five hundred and eighty-one Edison lamps of from 8 to 50 candle power each, and three hundred and forty-three arc lamps of from 4½ to 40 ampères each. All of these lamps are fed by

means of a net of underground conductors, measuring a total development of about 35 kilometers, viz: Net for conductors, 12 kilometers; net for distributing conductors, 23 kilometers. The electric current supplied to private parties is measured by Edison meters. The total number of Edison meters installed in Milan up to April amounted to five hundred and eighty. The workshop has been working night and day without interruption since 1883, and contains such a quantity of machines as could feed almost twice as many lamps as it is feeding now.

(2) A workshop containing five steam boilers, manufactured by Babcock & Wilcox, Glasgow, each of 136-horse power, with a heated surface of 110 square meters each and a normal pressure of 8½ effective atmospheres. This workshop contains also two Armington-Sims motors of 90-horse power each, with 275 turns; four Armington-Sims motors of 60-horse power each, with 275 turns; four Thomson-Houston dynamos supplying fifty lamps of 2,000-candle power each; four Thomson-Houston dynamos supplying thirty-five lamps of 2,000-candle power each; and two Thomson-Houston dynamos supplying thirty lamps of 2,000-candle power each. The dynamos evolve a current of 10 ampères at a tension of 2,500, 1,750, and 1,500 volts, respectively, for the three types of dynamos. Each steam motor commands, by means of two link belts, two dynamos. The conductors branching from this workshop are partly aërial and partly subterranean. The total length of aërial conduction is 100 kilometers; subterranean, 15 kilometers. Two circuits have been established in every street for public illumination, fed by two distinct dynamos. One circuit serves for the lamps to be extinguished at midnight and the other for the lamps burning until morning.

(3) This workshop is put in motion by a steam motor of 60-horse power, and is composed of two distinct parts, viz, one for the construction of electric dynamo machines and the other for the construction of incandescent lamps.

The total number of workmen employed in the three workshops is about three hundred.

GEO. W. PEPPER,
Consul.

UNITED STATES CONSULATE,
Milan, August 28, 1891.

ROME.

REPORT BY CONSUL-GENERAL BOURN.

In response to the request contained in the circular of the 9th instant, I have to report that, so far as I have been able to ascertain by inquiry through the proper channels, there are no underground wires used for conducting electricity in this district.

AUGUSTUS O. BOURN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rome, June 22, 1891.

PORTUGAL.

LISBON.

REPORT BY CONSUL-GENERAL BATCHELLER.

With the exception of about 1 mile of electric-light wires laid in the main avenue of the city, there are no underground conduits for telephone, telegraph, and electric-power cables in Lisbon.

GEO. S. BATCHELLER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Lisbon, August 4, 1891.

SPAIN.

BARCELONA.

REPORT BY CONSUL BOWEN.

The only wires that are put underground in Barcelona are the wires for private electric lighting and the cables of the Government and of the Direct Spanish Company. Telephone and telegraph wires and the wires of the electric company for lighting the two hundred arc lamps of the city are all suspended in the air. According to the Spanish law, the telephone wires should be underground, but the law will not be enforced, it is said, until certain improvements have been made in the old part of the city.

The electric company is obliged by law to have, and, as a matter of fact, does have, all of its wires, except those for the two hundred arc lamps referred to, underground at a depth of 60 centimeters. They are collocated in pipes, and are highly insulated. These pipes are placed under the sidewalks, and can not be placed elsewhere, except at the crossings. Every 60 yards there is a service box, made of stone, 80 centimeters below the surface; there the joints are, and there repairs are made. The tension is 5,000 megohms per mile. The number of private incandescent lights now in operation is three thousand.

The company pays to the city a yearly duty of 2 pesetas per meter and a tax of one-half of 1 peseta per meter of every wire. The electricity is sold at 1 peseta per 1,000 watts, and the meters used are watt meters, Aron system. The coal that is consumed costs 42 pesetas a ton, and is imported from England. The cost of gas is one-fifth of 1 peseta per cubic meter.

The wages paid to the men who lay the wires and pipes and make repairs vary from 3½ to 7 pesetas a day. The objections entertained by the company to the underground system are that it is much more expensive to the company and that the sidewalks can not be taken up and repairs made without first obtaining permission of the municipality, which not infrequently delays action for several weeks. Up to the present date the only accident that has ever occurred was to a mule, which was killed by coming in contact with a wire. The company is comparatively new. Its work is good, and it expects soon to have ten thousand lights in operation.

The cables of the Government and of the Direct Spanish Company are placed 1 meter underground. They are deep-sea cables, highly insulated, and their length to the seashore is about 3 miles. They are free from taxes, and no restrictions are placed on the situation they shall occupy under the streets; that is to say, they may run under the sidewalks or not, according to the wish of the engineers. They will soon be run through iron tubes, so as to be less interfered with by the water and gas companies. There is a

movement on foot to have subways constructed which will provide for all the wires and pipes of the city, as well as for carrying away all sewer matter. The subway system is considered to be the best, and eventually it will be adopted, for the best is nowadays the most necessary, and, everything considered, the cheapest.

HERBERT W. BOWEN,
Consul.

UNITED STATES CONSULATE,
Barcelona, June 27, 1891.

CADIZ.

REPORT BY CONSUL TURNER.

I beg leave to say that there are no underground conduits for telephone, telegraph, and electric-light wires in this consular district.

Wires of all kinds are over the streets or above the houses. The streets are generally so narrow that the entire space is occupied by the sewers and gas and water conduits. For this reason underground conduits for other purposes are impracticable.

R. W. TURNER,
Consul.

UNITED STATES CONSULATE,
Cadiz, June 24, 1891.

SWEDEN.

STOCKHOLM.

REPORT BY VICE-CONSUL GEORGII.

Telephone, telegraph, and electric-light wires and electric-power cables here, have, up to the present, been overhead, only gas and water pipes and sewers being underground. Quite lately the state department for telegraphs and telephones introduced an underground system for these cables in conformity with a patent already obtained by Engineer Axel Hultman for Sweden and most European countries, and for which system patent is also claimed in the United States.

The method consists of blocks of cement (each containing several pipes) joined together by means of long iron bars, and the interior of the pipes greased with some mixture to diminish vibration. No iron pipes are used, and the method is said to be very cheap. The work is going on of laying down the blocks, but they are not worked yet; consequently it is not possible to know the result.

Both private telephone companies' cables are all overhead.

AXEL GEORGII,
Consul.

UNITED STATES CONSULATE,
Stockholm, August 11, 1891.

THE UNITED KINGDOM.

ENGLISH POSTAL TELEGRAPH UNDERGROUND SYSTEM.

*REPORT BY CONSUL-GENERAL NEW, OF LONDON.**

This system, briefly, consists of copper wires insulated with gutta-percha and drawn loosely into cast-iron pipes placed a short distance below the surface of the ground.

The gauge of the pipes varies according to the number of wires that are to be, or are likely to be, drawn into them before their renewal becomes necessary. The following shows the size of pipes in general use and the number of wires each will hold: Wrought iron, 1 to 8 in 1 inch, 8 to 14 in 1¼ inches, and 14 to 20 in 1½ inches; cast iron, 20 to 40 in 2 inches, 40 to 80 in 3 inches, and 80 to 130 in 4 inches. The pipes up to 1½ inches being wrought iron, can be had any length; 2 inches cast iron are 6 feet, and 3 and 4 inches are 9 feet.

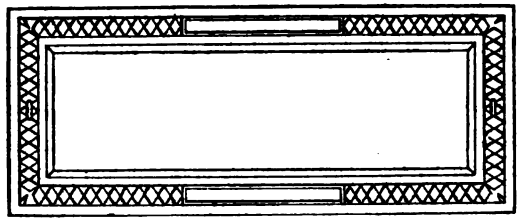
The interior of the pipes is made quite free from inequalities, so that no injury may result to the insulated wires when they are drawn in. The pipes themselves are dipped in a hot mixture of one part tar and three parts pitch oil (known as Angus Smith's composition), which coats them with a firm, hard glaze, and not only protects the metal from corrosion, but renders the inside surface perfectly smooth.

The pipes are laid at a depth of about 2 feet below the surface of the ground, generally under the pavement, and are jointed together in a similar manner to that adopted in the case of gas or water pipes, *i. e.*, with lead packing. As each pipe is laid in its place an iron wire of No. 7½ B. W. G. is threaded through it; to the end of this the cable to be pulled in is attached. The iron wire is carried through the pipes at the time they are being laid; it is next to impossible to thread it through for any length after they are laid.

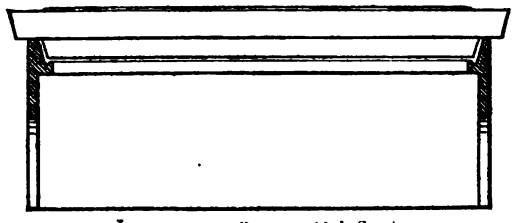
At distances of about 100 yards apart where the line is straight, and less if the route is at all tortuous, "flush boxes" are laid to facilitate the operation of pulling in. The actual distance between the boxes is to a great extent governed by the number of wires to be drawn in. The name "flush box" was originally given to these from the fact of their being laid level with the surface of the ground, which is still the practice in London and some other paved towns where the pipes are laid beneath the pavement. As the cable to be pulled in is manufactured in lengths of 400 yards, every fourth box of this class becomes a joint box, in which the junction with the

*The consul-general desires to acknowledge the courtesies of Mr. William H. Bruce, chief electrician of the English postal telegraph, who furnished valuable information on the subject of underground conduits.

succeeding section of the cable is made. These boxes are of cast iron. They have no bottoms, and have an opening at each end sufficiently large to admit the end of a pipe at any angle. The following cuts show a plan of the lid and longitudinal and transverse sections of one of the boxes:



PLAN OF LID (1/12th SIZE).



LONGITUDINAL SECTION (1/12th SIZE).

TRANSVERSE SECTION (1/12th SIZE).

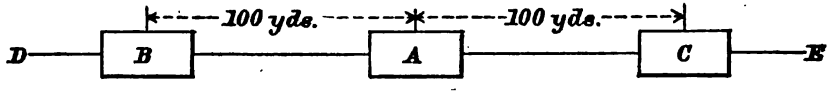
The pipes are led into the boxes so as just to project inside them, and the space around each pipe and the bottom are filled in with cement so as to make the whole water-tight. A large fragment of paving stone is placed under each corner of the box when the latter is set in position, to form a firm basis for the box to rest upon. The object of having the boxes cast without a bottom is to enable them to be taken out or new ones inserted, if required, without disturbing the cables passing through them, the cement bottom being easily broken away. The lid actually consists of an iron frame with a slab of paving stone cemented to it. In cases where a flush box has to be removed (owing to alterations in the streets), a split pipe (a pipe in two parts) covered over with cement is fixed in its place, and then a portion of a pipe is cut and broken away at some place in the vicinity and the flush box set in position there. The flush boxes are in two sizes, the smaller pattern being 2 feet 11½ inches long by 10½ inches square and the larger

pattern 2 feet 11½ inches long by 13¾ inches square. The smaller size is used when the number of wires does not exceed forty. In cases where a line of pipes branches off from another line of pipes "junction boxes" are used at this point. These boxes are practically merely large flush boxes, measuring 2 feet 1 inch every way, with pipe openings at each side.

The wire used for underground work in England has a copper conductor of No. 18 B. W. G., and is insulated to a thickness of No. 7½ B. W. G. with gutta-percha and then served with a covering of tarred tape, which has been drawn through a composition of Stockholm tar and melted ozocerite. Recently all the new wire used was further covered with a coating of powdered plumbago (under Truman's patent). This, it is believed, will effectually arrest the process of decay which has hitherto seriously shortened the life of the insulating covering. The wires to be drawn into the pipe are first of all laid side by side and tied together at short intervals, forming what is technically known as a cable; as the latter is drawn into the pipe the binders are cut and removed. In some cases (chiefly for telephonic purposes) four wires are twisted up together and the whole served with the tape covering. The small cables so formed may be laid parallel with other cables of the same type or with a number of the single wires and the whole formed into the large cable just mentioned.

The cable is coiled on a clean tarpaulin, laid at a convenient distance from the flush box where the work is commenced, so as to prevent its chafing as it is drawn into the pipes.

The ends of the copper wires of the cable are stripped of their covering for 2 or 3 inches and are twisted on to a loop formed in the end of the iron wire, which, as already remarked, has been threaded through each length of pipe as it was laid, and the ends are then lapped over with tape and yarn to prevent abrasion of the gutta-percha as the wires are drawn through. The work of hauling in commences from the central box *A*; one end of the cable is drawn from *A* to *B* and the other from *A* to *C*. The 100-yard length drawn

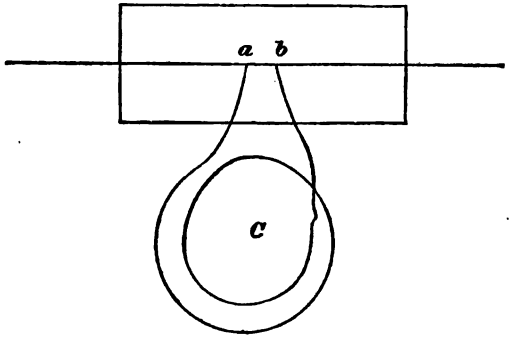


out at *B* and the 100-yard length drawn out at *C* are each coiled up on a tarpaulin and afterwards drawn in between *B* and *D* and between *C* and *E*. Before being drawn in, however, the coiled cable has to be turned over by being recoiled on the opposite sides of the boxes *B* and *C*, otherwise the ends can not be got at, lying, as they do, beneath the coils; and, moreover, the change in position enables a fair lead to the mouth of the pipe in the proper direction to be obtained. In order to prevent abrasion and to facilitate the drawing-in operations, bell-mouth hawse pipes of gutta-percha are placed in the mouths of the pipes. These mouthpieces are made in halves, and are left in the pipes after the drawing-in operations are complete, as they pro-

tect the wires from the edges of the pipes when the wires are being handled for jointing or other purposes.

When the section of cable is got into the pipes the numbering of the wires is proceeded with. From a small portable battery a current is sent along each wire and noted at the further end on a galvanometer; corresponding numbers are then affixed to the ends of each wire in succession until all have been gone through. These numbers consist of small leaden sleeves threaded on the wires with the numerals imprinted upon them.

In cases where it is required to replace a faulty cable by a new one, this is done without interrupting the working of the good wires (which have to be drawn out with the faulty ones) in the following manner:



At the flush box the two ends of each wire in the new cable *C* are jointed on to a bare portion of a working wire; the latter is then cut between *a* and *b*, so that communication now passes through the cable *C*. When all the wires have been similarly treated, the joints are temporarily covered with gutta-percha tissue, and the new cable is drawn into the pipes by drawing the old cable out.

When joints are made in the course of new work being executed, these are made temporarily in the first instance and afterwards remade by skilled jointers, who follow up the work of the "drawing-in" gang.

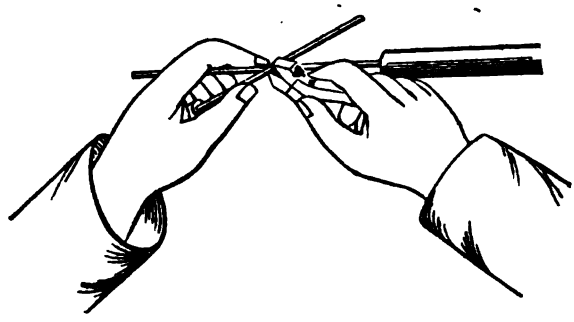
Jointing is a very important work, and requires to be executed with great care. The following are the instructions which have to be followed:

METHOD OF JOINTING GUTTA-PERCHA-COVERED WIRE.

(1) Strip the ends which are to be jointed for about 2 inches, thus:

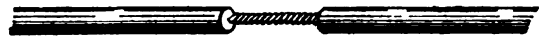
And scrape the conductors.

(2) Cross the conductors about half an inch from the gutta-percha and grip with the pliers:



(3) Twist the two conductors, first with the left hand and then (changing over the grip of the pliers) with the right.

(4) Clip off the superfluous conductor and solder the twist. Then trim off the sharp ends, leaving the twist thus:

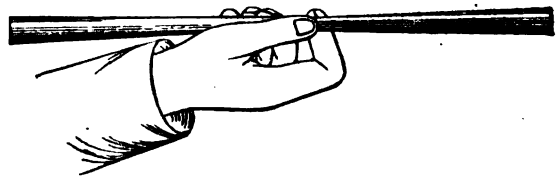


(5) Thoroughly clean all the rosin dirt from the conductor and pick off all that adheres to the ends of the gutta-percha.

(6) Warm up the gutta-percha for about 2 inches on each side of the twist and draw down the gutta-percha from one side halfway over the twist, thus:

(7) Draw down the gutta-percha from the other side over the remaining portion of the twist, as shown below:

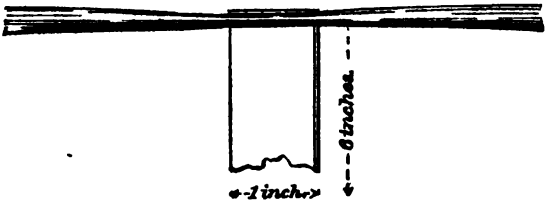
(8) Tool down the raised end of the second half of the draw-down over the end of the former half with a heated iron. Warm all up again with the lamp and work round over the whole of the draw-down with the thumb and forefinger, thus:



Then let it set before proceeding.

(9) Rough the draw-down with a knife and put on a thin coat of Chatterton's compound for about 1 inch in the center of the draw-down. Let it set before proceeding.

(10) Cut a strip of thick gutta-percha about 6 inches long and 1 inch wide, warm this well through from both sides with the lamp, and attach one end to the center of the draw-down, thus:



Quickly wrap it around the draw-down, giving form as shown below:

(11) Work the wrapping both ways quickly, but carefully, with the finger and thumb until it extends about 4½ inches.

(12) Tool down the ends where the new gutta-percha meets the old; warm all up again and work with the finger and thumb as before.

(13) Wet and soap the hand and rub it over the joint, leaving the finished joint smooth and round, thus:

Cleanliness in every operation is essential to the making of a good joint.

COST OF CONSTRUCTION.

The approximate cost of constructing a line of underground wires is as follows for opening out and filling in trenches, cost of pipes, relaying pavement, etc., per yard run:

	s.	*d.*
Gravel:		
3-inch pipe	3	6
2-inch pipe	3	0
York paving:		
3-inch pipe	5	0
2-inch pipe	4	6

If under asphalt or wood pavement, the cost would be from 2*s.* to 6*s.* per yard extra. The flush boxes cost about 12*s.*, including stone; junction boxes, about 18*s.* 6*d.*; drawing in wire, £2 per mile per wire for labor, plus the cost of the wire (about £15 per mile per wire). As regards the cost of maintenance, this is simply a matter of the cost of drawing in new wires; the pipes and flush and junction boxes will last at least twenty to thirty years. The durability of the wire varies; it has hitherto averaged from five to ten years, but the new black-leading process is confidently anticipated to greatly extend this time.

SUBWAYS.

I also submit herewith a list of the several subways in the city of London. These subways have been mostly carried out in connection with large works of improvement, and consequently only an approximate estimate of their cost can be given, say, for the size 6 feet 6 inches by 12 feet, including side passages, ventilators, and entrances, about £15 15*s.* per yard run.

Table showing list of subways, with sizes and lengths.

Subways.	Size.	Length.
	Ft. In. Ft. In.	*Feet.*
Garrick street, Covent Garden	6 6 by 12 0	375
Southwark street	6 6 by 12 0	2,666
Commercial Road, East	7 0 by 12 0	1,140
Victoria Embankment	7 6 by 9 0	7,000
Queen Victoria street	7 6 by 12 0	3,600
	7 6 by 9 0	
	8 0 by 8 0	
	6 6 by 6 6	
Northumberland avenue	7 6 by 12 0	925
Shaftesbury avenue	6 9 by 12 0	2,730
Charing Cross road	6 9 by 12 0	2,772

JNO. C. NEW,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
London, September 10, 1891.

CARDIFF.

REPORT BY VICE-CONSUL LOVIE.

The underground system of conductors in this district is under the control of the general post-office, and consists of conduits, which are usually of 3-inch cast-iron socket pipes laid at a depth varying between 2 and 3 feet below the surface. Convenient access is given to these pipes by means of suitable cast-iron boxes, with movable lids, which are placed at intervals varying between 50 and 100 yards. The conductors most frequently used consist of No. 18 B. W. G. copper wire coated with gutta-percha to a thickness of No. 7 B. W. G. The insulator is protected by a coating of tape saturated with a mixture of black lead, ozocerite, and Stockholm tar.

When the pipes are originally laid, an iron wire is threaded through so as to facilitate the subsequent operation of drawing in the cable. The cables, consisting of the requisite number of insulated wires, are then coiled opposite the respective flush boxes and drawn into the pipes in lengths averaging a quarter of a mile.

When it is necessary to increase the number of conductors or to replace the cables, owing to defects, new lengths are joined on and drawn through the

pipes by means of the old cables, which are withdrawn at the further extremities.

For telephone purposes, instead of taking each insulated wire separately, four conductors are cabled up and served with one coating of tape, the diagonal conductors being employed to form a metallic loop free from induction.

Some experimental lines, consisting of lead-covered insulated cables, have been laid; but these are, to some extent, still in the experimental stage, as none of them have been finally adopted for general use.

With regard to electric-light wires, the Brush Electric-Light Company established themselves in this district with open wires; but the Government interfered, as the regulations for the protection of the public safety and of the electric lines and works of the postmaster-general and of other electric lines and works prescribed by the board of trade under the provisions of the electric-lighting act, 1888, were not complied with, and the wires were condemned. There are, therefore, no open electric wires in Cardiff. The corporation of Cardiff has, however, obtained a provisional order for undertaking to light the town by underground conduits. The postmaster-general has to be consulted and his sanction obtained before any telegraph or electric wires can be laid, in order that they may not interfere with those belonging to the postal and telegraph service.

There are no electric-power cables in this district.

W. BRUCE LOVIE,
Vice-Consul.

UNITED STATES CONSULATE,
Cardiff, June 24, 1891.

LEEDS.

REPORT BY CONSUL WIGFALL.

There is no system of underground conduits for telephone, telegraph, and electric-light wires and for electric-power cables in this consular district.

So far as I am informed, there are no electric supply companies at work here, either for the purpose of furnishing mechanical power or for the service of light. All such employment of electricity is carried on for individual account and by isolated appliances.

The plant for power over an electric tramway is now in course of completion at Leeds. The power is to be derived from a fixed steam engine and dynamos at the station, and distributed thence by means of an overhead wire. The work is under the control of Mr. W. S. G. Baker, of Maryland, and the electrical apparatus are supplied by the Thomson-Houston Company, of Boston, Mass.

The telephone system in Leeds, and that of the telegraph as well, are operated on the same general principles as regards the disposition of the

wires. There are, of course, a much larger number of wires employed in the former service than in the latter. The telephone has, diverging from its central office, a certain number of cables, each containing one hundred wires, extending only through the portion of the town immediately contiguous to the main office. From the ends of these cables the service is taken up by elevated wires, supported, as is most convenient, on "fixings" (attached to buildings), on standards (erected on roofs), and on poles, each carrying such a number of wires as may be required by the respective situations. The total length of cable employed for this purpose of concentration will in the aggregate amount to only about a length of 1½ miles. The cable, as described, is contained in a 3-inch cast-iron pipe laid under the pavement of the public streets. The cables are used for only a part of the distribution from the central office.

The telegraph uses the same character of pipe as the telephone, but has employed about 8 miles in length, running to the outlying districts of the town, where poles take up the separate wires. In putting them through the pipes the individually insulated wires are bound together at one end in order to draw them through. The pipes containing these bundles of wires are laid at a depth of about 2 feet from the surface. In both cases the cost of laying, of repairs, and of maintenance of the lines are at the instance and expense of the telephone and telegraph organizations operating the lines. The municipal authorities have no connection with the undertakings beyond granting permission to disturb the pavements for the purpose of laying and maintaining the lines.

These general conditions, I understand, obtain throughout this consular district wherever density of population is sufficient to require such insulation, but otherwise overhead wires alone are employed.

F. H. WIGFALL,
Consul.

UNITED STATES CONSULATE,
Leeds, September 29, 1891.

LIVERPOOL.

REPORT BY DEPUTY-CONSUL SHERMAN.

In Liverpool the system of incandescent-light wires is altogether underground, and the post-office telegraph wires are laid underground wherever the number of wires running in a common direction is sufficiently large to warrant the expense of placing a conduit and maintaining it in working order. As to telephone wires, it is stated that this system is entirely aërial. There is absolutely no system of wires intended for the transmission of electricity as a motive force for the running of machinery of any description. However, small motors, wound for 110 volts, are run in one or two instances from the incandescent-lamp cables, the motor being merely substituted for

one or more lamps in the parallel system. With regard to fire-alarm, police, and other electrical call systems, these do not appear to have come into existence in this district as yet; hence this report is limited to the postal-telegraph and electric-light conduits.

The postal-telegraph underground cables are of exactly the same pattern as those used in the other cities of England, and are laid in the same way. This follows as a natural result of the unification of the telegraph systems and the governmental control thereof. The following information, supplied by the postal telegraph engineer for Liverpool (Mr. Edwards) in answer to a set of questions addressed to him, indicates the character and the extent of the telegraph conduits:

The underground system is mostly restricted to large cities, but there are many exceptions. In smaller towns, where the wires passing through are numerous, the difficulties and inconvenience occasioned by a large number of overhead wires are frequently such as to necessitate the substitution of an underground system, which is also frequently extended for considerable distances on roads leading out of large cities.

Urban branch post-offices in Liverpool are, as a rule, only connected with the head post-office by underground wires when a trunk line of such wires happens to pass near to, or in the direction of, such branch offices.

The conditions which determine whether the wires shall be aërial or underground vary with the nature of the localities. In some towns it is practicable to erect a much larger number of overhead wires than in others. Experience has demonstrated that, as a general rule, where the number of wires is large, it is economical to have recourse to an underground system, the cost of maintenance of open wires being heavy in consequence of the liability of damage to private property, especially during bad weather.

The post-office practically enjoys right of way for its underground wires, subject to the work of laying down being performed to the satisfaction of the corporation or other authorities controlling the streets, and there is no obligation to remove to make way for other underground works; but when the post-office system actually obstructs or hinders other works, and it is practicable to make suitable alterations, they are made always at the expense of the undertakers of the other underground works.

The conduits (cast-iron pipes) are laid to a depth of 18 inches below the pavement in loose soil and 12 inches in rock. When laid in the carriage way, the minimum depth is 2 feet.

The insulating material employed is gutta-percha, and the wire is supplied by cable manufacturers invited to tender for the same.

The insulation resistance required is not less than 200 megohms per mile. Practically the insulation is not affected by changes of temperature, and the first tests for insulation resistance are taken while the cables are immersed in water.

The inductive capacity is 0.29 microfarad per mile, the specific capacity of the gutta-percha is 4.2, and the resistance of the conductor about 23 ohms per mile.

The insulated wires are protected by an external coating of tape saturated with a solution of ozocerite, etc.

The cables are laid in cast-iron socket pipes, whose gauges vary according to the number of wires that are likely to be required. Pipes of 3 and 4 inches internal diameter are mostly in use. The former size will accommodate seventy wires and the latter about about one hundred and thirty. The wires, insulated and protected as demonstrated above, are drawn into the pipes by means of an iron wire inserted during the process of laying. There is no other insulating material enveloping the cable, which lies loosely in the pipe.

Iron boxes, provided with closely fitting lids and resting upon iron "trays," are made water-tight by means of cement, and placed at intervals of 200 yards. The ends of the pipes pro-

ject a little way into the boxes. Cables are, as a rule, in 400-yard lengths, and the joints are made in every alternate box, the intermediate boxes being used for facilitating the process of drawing the cables in or out. The joints in the copper wire, after having been soldered, are carefully insulated with gutta-percha to the same standard of insulation resistance as the rest of the cable.

The daily tests applied to wires, whether aërial or underground, are by "received currents." If the strength of current received is not up to the standard, insulation tests are taken and the locality of the leakage ascertained.

Conductor resistance tests are taken monthly by the "bridge" method, and the results duly recorded.

The usual causes of decreasing resistance are corrosion or the wearing away of the conductor. Incipient defects of this character are detected by the tests long before they reach a stage which will affect the practical efficiency of the circuit.

Provision is made for additional circuits by drawing into the pipes a number of reserve or spare wires. If all are brought into use and more are wanted, the cable must be drawn out and a new cable containing a larger number of wires drawn in.

It will be seen that these statements have no bearing on the subject of expense of construction and maintenance.

The cost of construction for a given form of conduit is dependent chiefly upon the price of the finished cables, the depth to which these are required to be placed, and the nature of the ground and pavement disturbed. As to the cost of the cable, this is to a certain extent a definite quantity; but the cost of placing the conduits, as it depends upon the wages of laborers, must vary more or less in different cities and very widely in different countries.

The continual enlargement of the electric company's plant proves well that the light is now rapidly coming into popular favor, but in past years its growth was very slow. Eight years ago a small station was built to supply two of the hotels with incandescent lamps; less than one thousand were installed. For over four years the increase seems to have been insignificant, and on the first day of 1888 the company still had less than one thousand 16-candle-power lamps, the actual candle power being 15,632; on the same day of the next year (1889) 53,280 candle power were in use; on the corresponding day of 1890, 107,376 candle power; and at the commencement of this year the number had swelled to 188,000, or the equivalent of eleven thousand seven hundred and fifty 16-candle-power lamps. The underground cables are continually branching out to meet the requirements of the enlarged plant, and up to January 1, 1891, there had been laid 20½ miles of conduit, or 41 miles of cables, the circuit being in all cases metallic, that is, a return or negative cable is laid parallel with the positive.

Before proceeding with a detailed description of the conduits, it will be well to examine briefly the dynamos and the arrangements for supplying and regulating the current, in order to secure a better idea of the nature of the service for which the conduits are intended.

The dynamos, of which there are thirteen, are coupled direct to engines of the tandem type, known as the Willan's central-valve compound engine. The bedplate of each engine is extended so that a dynamo may be bolted thereto.

Formerly in Liverpool belt-driven dynamos were used, but all these have been replaced by the more compact direct-coupled type, a compromise in speed being effected by combining a comparatively high-speed engine with a dynamo wound for a much less speed than is usual in belt-driving. The 180-horse-power (indicated) engines make three hundred and seventy-five revolutions per minute, and the 60-horse-power engine make five hundred. So well are the requirements of engine and dynamo adjusted that in the large generators the electric output bears to the indicated horse power of the engine the ratio of 86 to 100, that is, the efficiency is 86 per cent at full load. It must be borne in mind that this drop of 14 per cent includes losses in the engine due to friction and also the energy absorbed by the heavy reciprocating parts, which, in high-speed engines, where the momentum is very great, is a factor of considerable importance. At one-third load the efficiency is said to be 65 per cent.

Of the dynamos, two are Crompton machines and the remainder were made by Siemens Brothers. They are all of a uniform pattern—short, thick field magnets inverted over a drum armature made of quite large diameter, to give a high peripheral speed.

The newer machines have shunt magnet coils, which, in combination with a variable resistance, secure the regulation of the voltage—not, however, automatically.

The combination of engine and dynamo on one bedplate is compact and strong, slipping is impossible, and the compound engine imparts a perfectly steady rotation to the armature, which acts as a fly wheel (a smooth disc-like wheel on the shaft assists in preventing irregularities of speed, but this is auxiliary and of much less mass than the armature). Of course, this method entirely precludes such high speed as is common with American dynamos, at least with any form of engine in use at present. However, there is not the least difficulty in reaching the required electro-motive force, which, for incandescent (or parallel) circuits, is comparatively low.

Each station is well equipped with storage cells, of which some were made by the Electric Construction Corporation and the rest by the Crompton-Howell Electrical Storage Company.

The following is quoted from Mr. Yeaman, the inspecting electrician of the Liverpool corporation:

> The construction company's cells are of the well-known L. type, E. P. S. pattern, manufactured as follows: The grids are cast in iron chills, the negatives of lead-antimony alloy and the positives of lead. Both kinds of grid are pasted with red lead, mixed into a paste with diluted sulphuric acid, and are then dried and put into the forming tanks. Charging is commenced with a current density of 2 ampères per positive plate, increasing up to 4 ampères, the total number of ampère hours being about 100 each for the positive plates, which are then removed and their places taken by blind positives, with which the completion of the forming of the negative, which require about 200 ampère hours per plate, is continued. When formed, the plates are taken out of the tanks and burned together in sections as required. Each central-station cell has three sections of twenty-seven plates each, or eighty-one plates in all, each plate measuring 9½ by 9 inches by three-sixteenths of 1 inch thick.

The maximum safe rate of discharge of the cells is 250 ampères, and the storage capacity about 1,700 ampère hours at ordinary rates of discharge.

The plates of the Crompton-Howell cells are composed of porous lead, the structure of the plates being entirely crystalline and presenting a large surface to the electrolyte. The active material is formed electrically right through the plate, and does not readily fall away, but adheres firmly to the lead.

The plates are mounted on celluloid racks resting on the bottom of the cells, and are kept apart at the top by celluloid combs. The plates are not connected into sections, but the positives of one cell and the negatives of the next are burned on to a common lead bar supported on insulators between each cell.

Each cell has fifty-one plates 8½ by 8½ inches and one-fourth of 1 inch thick, and may safely be discharged at the rate of 400 ampères, having a storage capacity of 800 ampère hours when discharged at the normal rate of, say, 200 ampères.

These batteries afford a considerable reserve supply of current for emergencies. The machinery now in working order has a capacity considerably in excess of the demands ordinarily made upon it; and, rather than reduce the efficiency of the generators by running them at small loads, only a certain number of the engines and dynamos are used at a time, and these at full load, however the number of lamps may vary.

An ingenious subdivision of the storage batteries enables them to be charged at the same pressure as that supplied to the distributing mains, and whatever surplus current there is from the dynamos running above that supplied to the lamps can be very economically given to the cells switched parallel with these lamps.

In Liverpool the electric light is supplied to few residences, and only in rare instances is it used for street illumination. The more important shops or stores and the municipal and business offices consume most of the current, and, though these occupy a region entirely distinct from the residential part of the city, still, in the opinion of the company, they are too scattered to admit of the whole business territory being supplied economically by mains from one large central station. The result has been the erection of three independent and complete stations, each supplying a given territory, and located therein with a view to furnishing the current to the surrounding area in the most economical manner. Of course, the capacity of the station depends upon the needs of its particular district, but in two of the stations there is a good margin for future enlargement. Highfield street station (started in October, 1889), which is located near the town hall and municipal offices and supplies that densely built part of the city, can light seven thousand 16-candle-power lamps; and the other two stations—Harrington street (started in September, 1888) and Oldham Place (started in October, 1890), the latter of which supplies the residential portion of the city—can light four thousand and four thousand five hundred lamps, respectively, though the actual supply is subject to very great variation, as will be seen presently.

The purpose of dividing the generating machinery and erecting separate stations was, as just stated, to supply separate districts in a manner as economical with regard to the expense of mains as might be consistent with

other considerations of cost; and, in view of this fact, the small distance between two of the stations would hardly seem to justify the greater cost of separate small plants and separate management and maintenance and the more elaborate system of conduits which such subdivision must necessitate. Harrington street and Highfield street stations are 550 yards apart; Harrington street and Oldham Place stations are 941 yards apart, while the last-named place is separated from Highfield street station by a distance of 1,340 yards.

The considerations which determine the positions and number of the stations are, as enumerated by Mr. Yeaman, as follows: Position defined by available ground, suitable sites for machinery, easy of access for supply of coal and removal of rubbish, not unduly expensive, and near the center of the district to be supplied from the proposed station.

The number of stations is defined by the total area being divided into parts, each capable of being supplied from a station with fair economy both in first cost of plant and mains and, secondly, without excessive losses when running.

These facts have been given at greater length than the subject of the report would seem at first sight to require, but they have an important bearing on the extent and arrangement of the conduits.

The following is taken from the "Liverpool Electric Supply Stations," a paper read by Mr. A. Bromley Holmes, M. Inst. C. E., the engineer of the Liverpool Electric Supply Company, before the Liverpool Engineering Society, January 21, 1891:

All the distributing mains of the Liverpool Electric Supply Company are laid underground and have been manufactured and laid by the Callender Company.

The conductors are of stranded copper wire, with a conductivity of 98 per cent.

The largest feeding mains are composed of ninety-one No. 9 wires, and have a sectional area of 1.57 square inches. The conductor is covered with two layers of jute yarn and boiled in refined bitumen. It is next wrapped with parchment tape and covered with a lead casing. The lead is protected by an outside covering of rough jute yarn treated with asphalt and tar.

The ordinary feeders are made of sixty-one No. 11 wires, with an area of six-tenths of a square inch, and the distributers of thirty-seven No. 13 wires, one-quarter of a square inch in area. In both these mains the copper conductor is covered by a solid sheath of bitite or vulcanized bitumen, put on under heavy pressure at one operation. This core is next taped and compounded, and finally braided with hemp yarn and passed through a bath of asphalt compound.

The mains are laid in cast-iron troughs one-fourth of an inch thick and about 6 feet long, with socket joints. When the troughs are placed in position about one-fourth of an inch of refined bitumen in a molten state is run in, and, before setting, spacing bridges of wood are placed in it about 18 inches apart. These bridges support the cables and hold them in place clear of the sides and bottom of the trough and of each other. Bitumen is then run in so as to entirely cover the cables and fill up the iron troughs to within half an inch of the top. The troughs are then finished by a covering of Portland cement concrete about 1 inch thick. Strong cast-iron covers are in some cases substituted for the concrete.

The service lines from the distributing mains to the consumer's premises are made of nineteen No. 14 wires, insulated and covered with lead pipe, and are run in grooved wood casing, filled in with bitumen and protected with a hard-wood cover strip.

The connections of the various lengths of mains to each other and of the feeders to the distributers are made by sweating copper lug pieces on to the ends of the cables and by bolting copper connecting bars to the lugs.

The distributing mains are jointed in a similar way, the connecting bars being fitted with terminal screws for the attachment of fusible tin strips, to which the service lines are attached.

The connections described above are made in cast-iron joint boxes, measuring inside 16 by 12 by 12 inches, provided with socket pieces to receive the ends of the cast-iron troughs in which the mains are laid. Each box has a strong cast-iron cover, held down by a central bronze bolt and crossbar. A water-tight joint is secured by means of a soft India-rubber washer between the cover and the box.

All joint boxes are below the level of the pavement, and the surface of the footway is completed by an iron frame and surface plate, by means of which access is afforded to the joint box. In many cases the surface plates are formed in cement to match the adjoining paving.

The general arrangement of mains is as follows: A pair of distributing mains are laid under the footways on each side of each street and are connected together to form a complete distributing network, to which are connected all the service lines to consumers' premises. For convenience in working, the network is divided into sections. The supply of current is brought to selected distributing points in this network by heavy feeding mains, which run direct from the generating stations.

The feeding mains are so proportioned relatively to the distance from the station of each distributing point and the number of lamps to be supplied from it that the percentage of loss in pressure in each feeding main may be as nearly as possible the same; in other words, if the lamps were turned on and off uniformly all over the area of supply, a constant pressure might be maintained throughout the network by varying the electro-motive force of the dynamos at the central station in exact proportion to the amount of current supplied.

As a matter of practice, however, the hours of demand vary in different streets and districts, and it is found necessary not only to vary the station pressure as a whole, but also to regulate the pressure of each set of feeders individually. The following figures will give some idea of the extent of the mains already laid:

The district served by the mains extends 1,300 yards (measured straight on the map) from Lime street to the bottom of Brunswick street, 1,000 yards from Old Hall street to the head post-office in Canning Place, and 1,550 yards from Highfield street to the top of Bold and Wood streets.

The length of frontage along which distributing mains are laid is 9¼ miles. The total length of single cable used throughout the area is 41 miles. Taking a pair of cables to form a main, the lengths of the various classes of mains are as follows:

	Miles.
Feeding mains	10
Distributing mains	9
Service lines	1½
Total	20½

The weight of copper in the mains is 210 tons. The number of joint boxes, service boxes, and pressure-wire boxes is 630. The number of separate service lines is 275, but many of these serve for the supply of several customers.

Pressure wires are run in specially laid cast-iron pipes * from the various distributing points to the central stations, and are connected to instruments, by means of which the actual pressure at each point is indicated to the engineer in charge and is continuously and automatically registered.

* Made with "spigot and socket" joints.

The main switch board in each station is fitted with an ammeter and registering pressure indicator for each pair of feeders.

These street mains are connected up to massive terminals on the switch board, fitted with safety cut-out strips, which would fuse in the event of any serious short circuit on the main.

All the dynamos in a station are arranged to work in parallel on to a pair of positive and negative collecting conductors, and are switched in and out of circuit as the variations in load require.

Each negative feeding main is connected from its cut-out to the station main negative conductor, and each positive feeding main is connected through an ammeter to a main regulating switch, which, when in its normal position, completes contact with the station main positive conductor. By moving the regulating switch it is possible to introduce a number of accumulators one after another in the circuit of any desired feeder. These accumulators are arranged in opposition to the dynamo current, and consequently the pressure of the feeders is reduced by 2 volts for each cell put into circuit by the regulating switch.

This at first sight may appear a wasteful method of regulation, but in practice the load is found to rise so uniformly over the whole area of supply that the amount of energy absorbed in regulation is practically unimportant.

I have introduced the above lengthy extract because it serves to describe directly and clearly, and in the language of an expert, the arrangement and connections of the main cables and pressure-indicating wires.

In the foregoing the system has been spoken of only as one intended for the supply of incandescent lamps, and, in fact, that is the light used almost to the exclusion of the arc; but it is worthy of note that, in a few instances, arc lamps are lighted from the company's mains, and such a method has been "found to be extremely satisfactory." When so used they are coupled two in a series across the mains, with an extra resistance also in series to absorb the total pressure.

The potential is 110 volts at the terminals of the consumer's service wires, the declared pressure at the feeding points being 112 volts.

The variations do not exceed 1 volt above and 3 volts below these standards during the twenty-four hours, except in cases of short circuit or excess of current being taken by a consumer, and the maximum current density in any portion of the network is never allowed to exceed 1,000 ampères per square inch of cross section of copper. (Yeaman.)

The limit of the current allowed per square inch of conductor, referred to in the preceding paragraph, is rigidly adhered to,* and thus the cross sections of the various classes of cables is determined as enumerated below, the data being supplied by Mr. Yeaman.

There are several classes of cables, lettered A, B, C, D, E, F, and G. First come the feeding mains, conveying the current from a central station to the distributing points.

Mr. Yeaman says:

The arrangement of the mains generally is to lay a circuit in lengths to a given point from the engine room, from which point an adjacent area is supplied, the size of the area being

* A board of trade regulation demands that the maximum rise of temperature of insulated cables under conditions such as those to which the Liverpool Electric Company's lines are subjected shall not exceed 30° of the Fahrenheit scale. And Mr. Yeaman's experiments have demonstrated that the company's cables carrying 1,000 ampères to the square inch of cross section do not acquire quite that degree of heat when subjected to such current for six hours continuously. The company's limit, therefore, falls within the board of trade regulation.

proportioned to the demand in that district and to the area of cross section of copper laid down. Where possible the whole of the mains are laid in the foot walks, so as to avoid trenches in the expensively laid streets.

They are made heavy or light according to the amount of current it is intended for them to convey, and are called, respectively, A and B. I quote from Mr. Yeaman:

If the continuity of a feeder be broken, the district so supplied will be entirely deprived of light. In several cases mains are bunched to form one feeder where the largest mains in use will not suffice to carry the current required.

Then there are the smaller distributing cables, which take the current at the distributing boxes and carry it past the buildings to be lighted. These distributers are made in two grades, heavy and light, called, respectively, C and D.

Then the service wires join the distributers at numerous service boxes along the distributing conduit and lead the current directly to the consumer's premises; these wires are lettered F. E is a composite main, consisting of feeder and distributer. G is a heavy station feeder, adapted for conveying a heavy current from one station to another in case of a breakdown at a station. This latter class of cable is put to one other use beside that of conveying current between stations. There are various points in the area supplied where, so far as economy of distribution is concerned, it would be well to have a central station, but where, from other considerations, such a station would not be practicable. In these cases a heavy "station main," conveying the current which the supposed station would be called upon to supply, is run from the nearest available station to that point, which then becomes a central point of supply, though, of course, dependent upon the generating machinery of the central station. At this point a "feeding box" is placed, and numerous feeding mains branch out therefrom precisely as from a central station.

Table showing the total area, etc, of Liverpool cables.

Cables.	Total area.	Wires stranded in each conductor.	Diameter of each conductor.	Nearest Birmingham wire gauge.	Weight of copper main per 1,000 yards.	Resistance per 1,000 yards of main.	Full load.	Drop per 1,000 amperes per 100 yards.
	Sq. inches.	*Number.*	*inches.*	*Number.*	*Pounds.*	*Ohms.*	*Amperes.*	*Volts.*
A	1.2	2 to 61	0.112	11	28,000	0.04	1,200	0.4
B	0.6	61	0.112	11	14,000	0.08	600	0.8
C	0.5	2 to 37	0.092	13	12,000	0.1	500	1
D	0.25	37	0.092	13	6,000	0.2	250	2
E	0.85	61	0.112	11	20,000	0.054	850	0.54
		37	0.092	13				
F	0.1	19	0.08	14	2,300	0.5	100	5
G	1.5	91	0.114	9	36,000	0.032	1,500	0.32

The general scheme of the conduits is presented in the foregoing pages; but there are several distinct patterns. There are, in fact, seven sizes, adapted to the requirements of the seven classes of cables, corresponding to which the conduits are lettered A, B, C, D, E, F, and G. The first five are made of cast iron, without covers, the layer of cement being substituted. A holds two

(horizontal) layers of cables, each consisting of two parallel cables, or four in all—two positive and two negative. B holds but one layer of two parallel cables. C is similar to A, but, of course, of less cross section, as it is intended for the distributing cables, which are smaller than those classed under A. D corresponds to B on a smaller scale. E carries the composite mains. F is simply a wooden trough made from a piece of timber, with two parallel grooves of semicircular section running along its upper face. The service wires are laid in these hollows and are held down tightly by a thick layer of cement. G is used for the station feeders, and contains only two cables, one placed vertically over the other, with a cast-iron cover over them. These are made in accordance with Callender's solid bitumen system.

Whatever the character of the ground traversed, the depth of a particular grade of conduit below the surface is constant. The depth, however, is different for the various classes of mains, and is also required to be greater when the cables are laid under the roadway than when laid under the sidewalks. It is stated that these depths, which are specified below, are rigidly adhered to, and application must be made to the inspecting electrician of the city corporation for a permit either to continue the excavation to a greater depth or to bring the conduits nearer to the surface. Similar application must be made for a horizontal deviation from the approved route.

The depth under roadway (concreted) is as follows: A, 2 feet 6 inches; B, 2 feet; C, 2 feet 6 inches; D, 2 feet; E, 2 feet 6 inches; F, 1 foot 6 inches; G, 2 feet 6 inches. The depth under sidewalk (clear) is: A, B, C, D, and E, 1 foot; F, 6 inches; G, 2 feet.

Although the pipes for the corporation pressure-indicating system are now laid, the wires have not yet been placed therein. The system of pressure wires lately in use, and at present being given up, is exceedingly defective. It consists of small bitumen-insulated wires placed in the conduits by the side of, and in the interstices between, the supply cables. The reason for this being unsatisfactory is that while the object of the pressure wires is to indicate variations of potential (which may be due to faults in the supply cables), these same faults affect to a greater or less degree the insulation resistance of the pressure wires themselves, which are thus rendered unreliable. And, again, the same external cause which produces a fault in the cable is not unlikely simultaneously to injure the pressure wires; and these latter, to be satisfactory, should be wholly separate from the current-conveying cables (at least, in this grade of conduit) and protected against injury from external causes in the most complete manner. When the "pilot," or "pressure," wire cables have been put into use—and they shortly will be—these conditions will be fulfilled.

There are about 2 miles of 4-inch cast-iron pipes intended to contain pressure wires. The various cables to be used for indicating the electrical pressure are of the following dimensions:

(1) A cable composed of three conductors, each of which consists of seven No. 23 B. W. G. wires stranded. Each of the three conductors is insulated with gutta-percha and is steel braided after stranding.

(2) A cable composed of seven conductors, each of seven No. 23 B. W. G. wires. The insulation is vulcanized rubber. Each wire is tinned. The cable is steel braided, outside braided, and compounded.

(3) A cable composed of seven conductors, each of three No. 20 B. W. G. wires. Each conductor is separately lapped with proof tape, cabled up, and the whole is proof taped again, braided, and compounded.

(4) A cable composed of three conductors same size as last, each insulated with gutta-percha, cabled up, braided, and compounded.

The pressure wires connect the various distributing points with the laboratory of the inspecting electrician, from which they will continue to the Electric Supply Company's main switch board. The instruments used in the laboratory in connection with these wires are electrostatic (Sir William Thomson's electrostatic voltameters), and consequently, under ordinary circumstances, no current will pass through the pressure wires; but, as a matter of precaution, these are to be joined to the supply cables in the boxes by lead wire fuses, No. 22 B. W. G., 1½ inches long.

The insulation resistance of the cables is required to be 500 megohms per mile when laid.

Mr. Yeaman says:

> The laying of the pipes is executed to the specification (a very strict one) of the city engineer, while the entire work in connection with the pressure wires is carried out under the control of the electrician of the engineer's department.

Before continuing with an outline of the above and other rigid regulations under which the company and contractors work, it will be well to revert to the pressure wires now in use and to the supply cables themselves, and to examine more closely the insulating medium employed, as well as the precautions adopted to protect this from injury. It will be remembered that the pressure wires have been laid hitherto by the side of the main cables in the same conduit, and enveloped in the same insulating material, viz, bitumen. Bitumen is thus made an important factor in the underground electric work of Liverpool. The disadvantages attending the use of this insulator in connection with the pressure wires were pointed out on a previous page; but, as regards the supply circuits, such as those in which it is here used, it is considered to do good service. Perhaps its being waterproof is its chief virtue. Moreover, it is not friable, and when used in a clean state and carefully applied it makes a homogeneous, waterproof mass, nicely fitting itself around the cable, completely filling the conduit, its corners and joints. But as an insulator it is vastly inferior to the expensive gutta-percha used in the postal telegraph system (and soon to be used in the pressure-wire pipes). However, if the cable is well made and its sheathing capable of withstanding the maximum electro-motive force to which it is to be subjected, then the purpose of the trough filling is not so much to augment the insulation resistance as to assist in protecting the cable from external injury, to prevent the ingress of water and gas, and to keep the cable from close contact with the metal walls of its conduit. For such purposes

bitumen, being cheap, abundant, and easily handled, answers admirably. In applying bitumen to the troughs care is necessary in order that air bubbles may be excluded from the bitumen while this is being heated down to a fluid state prior to being run into the conduits.

The casks of bitumen are brought to the work; these are broken open and the solid bitumen split into blocks and thrown into a caldron suspended over a slow coke fire, where it melts. It is carefully watched and not allowed to boil; thus air bubbles are avoided. When sufficiently fluid it is poured into the trough or conduit, where it solidifies.

The use of bitumen does not stop here, for in the Liverpool system it is used refined and vulcanized (in which state it is called bitite) as the insulating sheathing of the cable. In the older cables a yarn braiding was applied, soaked in and coated with bitite; but latterly this yarn is being omitted and bitite used alone, with what results will be seen in the following pages.

Mr. Yeaman says:

The oldest underground line in existence here is just over three years old. Provided the conduits are protected mechanically, there appears to be no reason why the life of the cables should not be indefinite. The insulation is protected by the bitumen surrounding the cables, so that water never reaches the actual insulator. As the bitumen will practically last forever, the only causes tending to limit the life of the cables and their conduits are mechanical damage and chemical destruction. The soil contains, in certain situations, large quantities of salt, as may be imagined from the proximity of the sea. If the saline matter can reach the vulcanized bitumen rot sets in. The service mains (F) are alone damaged by this cause, so a lead sheathing is adopted in this instance, as also in the case of the heavy station feeders. The chief cause of damage to the cables is street repairing and reinstatements in progress; mechanical damage from such causes has caused more faults than any other reason. The cables are expected to last at least fifty years, and the repairs are not supposed to exceed 1 per cent of the first cost.

The boxes described in the quotation from Mr. Holmes are partially filled with bitumen, so as to cover over all the cables and the joints where they enter the box, and this bitumen is made continuous with that in the troughs outside. In giving origin to service lines, one of the service boxes is placed opposite the center of each block of buildings, the various connections for the houses in that street or section of street radiating from this box and being formed by laying lead-covered 19–14 cables in wooden troughs filled with bitumen. Thus one junction service box, as a rule, serves several houses, although in some cases when a large establishment takes a great number of lights a special junction box is used for this one place alone. The cables connecting to the customers come in at the side of the box and are brought up to bronze connections, from whence they can be connected across to the mains, and cut-outs are usually inserted at the junctions. The boxes are not built up close with brickwork, but a space of about 1 inch is left between the outside of the box and the inside of the brickwork, so as to afford proper drainage. The cover of the box and the street cover are quite separate, and a varying distance intervenes between them, being sometimes over 3 feet in the case of pressure-wire boxes. The boxes are tightly sealed, as the conduits, being solid, can not admit of accumulation of gas.

With further reference to the various classes of boxes used, it should be remembered that a distributing box is a box in which the feeders are tapped by distributers. This box takes two pairs of feeders (sixty-one wires 0.112 inch in diameter each) and two pairs of distributers (thirty-seven wires 0.092 inch in diameter each), laid in an iron trough (6 by 6 inches of quarter-inch iron). As connected up two distinct pairs of feeders are tapped by two distinct pairs of distributers. If it were necessary to couple all in parallel or to couple in any other variation, it could be done very simply by the copper connecting pieces. Copper pieces are sweated on to the ends of the conductors, and the joint thus made is perfectly insulated with bitite. The insulated joint is next treated with Callender's insulating wax compound, which preserves it against moisture and insures a perfect insulation. The copper connecting pieces are fixed to the lugs by means of phosphor bronze set screws. Before being placed in the ground the boxes are boiled in fine bitumen in order to preserve the iron and insure a water-tight joint between the bitumen and the iron at all points of contact. Especial care is taken to seal with bitumen the apertures through which the cables enter the box. The India-rubber washer used between the cover and the box is fastened with India-rubber solution to the lid, and the method of fastening the lid down is found to be excellent. The crossbar can be removed easily when it is necessary to get at the connections. All the boxes (except one class to be mentioned later) have a surface cover, so that they are always accessible without raising the pavement. The service box takes a pair of distributers 37–13 laid in an iron trough 4½ by 3 inches, and the household service cable 19–14 lead-covered laid in wood casing. The distributing main is in no instance tapped for more than four pairs of 19–14 cable at one box, forming in this extreme case four separate services, each with a maximum capacity of 100 ampères and a working capacity of 90 ampères. The connections are made from the main to the service cables by lead fuses intended to melt at 140 ampères. The service cable entering its aperture in the side of the box is held in position by a block of bitumen wax run solid around it (the lead casing being cut away from the end of the cable inside the box). The block of wax serves to keep the box water-tight and insulates the cables. The cables are all set in position to templet, so that standard size fuses can be used. These boxes have surface covers. Where more than one consumer's premises, with separate frontages, are to be supplied from a single service line (*i. e.*, a pair of 19–14 cables) a branch service box is used, which takes the pair of cables as laid in wooden casing. The box, as in other cases, is "pickled" (as it is technically called) in bitumen and supplied with a cover. It is placed in an outer box, the object of which is to enable the box to be made water-tight without burying the connections in bitumen wax. With this object the outer box is filled with bitumen up to and just above the lid of the inner box. When the connections have to be opened up, the thin coating of bitumen over the surface of the lid is broken and the lid removed. A disconnection can thus be rapidly made. Such a box is used without a

surface cover, and its position under the sidewalk is indicated on the flagstones above it. The surface covers for feeding, joint, and service boxes are supported free from the boxes by brickwork.

The mains are tested for insulation resistance by the company's electrician about one week after completion of any section. It is required that each section (about 100 yards) shall show 30 megohms insulation resistance. The testing set used is that made by the Silvertown Company, and the test may be described in a few words as being that known as the direct deflection method, with shunted galvanometer and standard resistance. Forty small Leclanché cells are used in taking the test. The constant is first obtained with five of these cells, a 10,000-ohm coil and the one-ninth shunt to the galvanometer. The shunt is then removed, the battery power increased to that of forty cells, and the two-way switch is put over so as to replace the 10,000-ohm coil by the section of cable under test, one side of the battery being always earthed. The test is usually taken with both positive and negative currents to eliminate polarization and electrolytic effects. In the case of the system of pressure wires laid down for the corporation similar tests and methods are adopted, only in this case the instruments used are a 5,000-ohm astatic reflecting galvanometer, giving a constant of 12,000 megohms (with a twenty-second swing), with its Kemp's compensated shunt box of three ratios—one-ninth, one ninety-ninth, and one nine hundred and ninety-ninth ($\frac{1}{9}$, $\frac{1}{99}$, $\frac{1}{999}$)—and a standard megohm of five subdivisions of B. A. pattern, and sixty portable secondary cells of Pitkin's patent pattern. The tests are to be taken from the inspecting electrician's laboratory, so that a continuous test may be kept on the cable throughout the process of laying and jointing.*

The corporation standard of insulation resistance for pressure wires is 500 megohms per mile, including joints and terminals.

A special system of localizing faults of high resistance has been worked out in Liverpool by Mr. Voysey, Messrs. Callender's engineer, which will locate a fault up to 10 megohms, without requiring any disturbance of the mains or public way. The principle adopted is, briefly, that if an alternating high-tension current be sent along a main which is insulated with exception of the earth contact provided by the fault which it is desired to find, there will be magnetic induction or field of force surrounding the cable from the point at which the alternating current is sent into the cable to the unknown position of the fault. The practical method of carrying this operation into effect has been brought to success by Mr. Voysey by the employment of an induction coil (with a closed magnetic circuit and a separate contact breaker, adjustable for speed), one side of which coil is earthed and the other coupled to the insulated section of the slightly faulty main. The coil is energized by a small E. P. S. secondary battery, which gives about 2 ampères at 8 volts. The secondary of the coil under these conditions gives a half-inch spark. An apparatus, which may be described as the secondary of a transformer with one-half of the magnetic circuit removed, is then

*Messrs. Nalder Bros. & Co., of London, are the contractors for the corporation electrical instruments.

drawn along the surface of the pavement over the route of the cable by means of a specially designed carriage. To the coil of this transformer there is attached a Bell telephone receiver. The coil is wound in sections, so as to permit of varying resistances being obtained to facilitate the localizing of faults of widely differing values. The engineer proceeds along the route of the cable from the feeding or distributing box where the induction coil is coupled to the cable, and, with a telephone at his ear, instructs the men in the charge of the apparatus as to their movements. A loud rattling sound is heard in the telephone up to the position of the fault, where the noise either suddenly ceases or very greatly diminishes. Marks are made on the sidewalk to denote the probable position of the fault, and the entire operation is repeated from the other end of the section of cable, affording a check upon the first determination. The objection to this method is the necessity for conducting the tests during the small hours of the morning, so as to insure absolute silence, and, with a view to avoid extraneous sounds, the search-coil carriage is provided with noiseless tires. The method has been found entirely successful, except where iron covers to the troughs or conduits containing the cables are used, in which case the magnetic effect is masked, and the position of the fault can be only found approximately.

The Callendar system of conduits and cables is also used in the following places in Great Britain, with the modifications noted:

Bath.—High-tension (2,000 volts) alternating, Brush Company's system. Underground conductors are similar, with the exception that the joints are made in the ordinary way of jointing India-rubber cables (only that bitite tape is used in lieu of India-rubber tape). The joint is vulcanized on completion, and the joint box is filled up solid with bitumen, doing away entirely with bare joints. In this case the insulation of some 5 miles of cables after a year's work is over 12 megohms.

Chelsea.—High-tension continuous current, battery transformer system; vulcanized bitumen cables drawn into bitumen, and sand casings, with manholes after an American plan.

Birmingham.—A 110-volt system similar to Liverpool, where the Callendar solid bitumen system is used wherever Crompton culverts are not permissible.

London.—Metropolitan Electric Supply Company. A 100-volt system similar to Birmingham, except that Crompton culverts are not used in connection with these cables.

Brighton.—Installation is in process of construction, using a system similar to Liverpool. (Also at Paddington.)

Having called attention to the principal points in the system of electric conduits of the Liverpool Electric Supply Company (limited), I might mention that the features making it conspicuous among the systems of other large cities are:

(1) That it was the first attempt in England, on a large scale, to place conductors underground with a view to permanent supply.

(2) That the systems of generation and storage employed in connection with the network of conduits are exceptional in some of their details.

(3) That the "tree" system is used without regulation in the feeders.

(4) That changes are almost daily made in the coupling up of the network, this being rendered easy by the elaborate system of joint boxes.

(5) The number of boxes in connection with the system (at present some six hundred in all) is largely in excess of that in any similar system in England. (Yeaman.)

The principal reasons for employing the system already described were:

(1) The belief of the engineers of the company that cast iron and bitumen, copper and solder were materials which, used in the above-described manner, were little liable to deteriorate, and that therefore a system employing these substances would have an extremely long life.

(2) The good work which had already been done by the contractors who were empowered to carry out the work.

(3) The consideration that only thoroughly mechanical designs and really good engineering work in a system of underground conduits would be of any efficacy in maintaining the permanency of such a system and thereby insuring the continuity of supply.

(4) The regulations of the board of trade and the conditions imposed in the concession by the Liverpool municipality, together with the congested condition of the sidewalks and roadways of the city, which were almost prohibitive of any other system.

(5) The relatively small first cost of laying down these conduits when the probable demand could be gauged was a strong factor in the selection of this system. (Yeaman.)

The laying of the conduits and cables is done in accordance with various regulations imposed by the city, and the work itself must satisfy the health committee, which has authority over all work affecting the roads and highways. The inspecting electrician, acting for the city council, personally examines the work, inspects and approves or rejects the plans, tests the cables, and satisfies himself that all the work is being done in accordance with the regulations and the best interests of the citizens. Mr. Yeaman cites the following instances:

In digging the trenches, no greater length than 50 yards shall be opened at one time, and the trenches along the route shall not be proceeded with until the inspecting electrician is satisfied that the positions of the mains will be at least 1 foot clear of all waterworks, pipes, and fittings.

As to the pressure cables, the core will be delivered by the Liverpool Electric Supply Company to the contractors, who must, before accepting the same, submit the drum or drums to the inspecting electrician for testing. On receipt of his certificate the contractors will remove the core to their yard, without tampering with the corporation seal (which the electrician affixes). The drawing in of the cables is to be carried out under the supervision and to the satisfaction of the inspecting electrician, who will test each length (after drawing in, after jointing, and, lastly, when the next section is jointed on). The cables are to be intact from end to end with continuous insulation. The cables will be drawn through a bath of Stockholm tar before they are pulled into the pipe line.

The Liverpool Electric Supply Company furnishes to the city engineer plans of all proposed works. These plans are drawn to scale, and show all visible obstructions, together with the exact method of executing the proposed works. The plans are presented by the city engineer to the health committee, and are approved or rejected. If approved, the inspecting electrician surveys the ground with the contractor's engineer and signs the plans.

When ready to begin work the contractor's engineer serves notice upon the inspecting electrician. The work then proceeds in accordance with the plans, the right of way being given by the plan, provided that the works sections of the Liverpool electric-lighting order, 1889, the standard conditions, the procedure rules, and the contract specifications are adhered to in all respects. An inspector of the roads department is always present on the work, who has power of veto only, but an appeal may be made to the inspecting electrician and then to the city engineer. This applies to corporate property only. Where private works are concerned the matter is one for mutual agreement.

The company requires the trench to be made as straight as possible and to have a perfectly even and solid bottom. It is to be made in as long lengths as allowed by the city authorities, with a standard width of 2 feet.

The troughs are to be laid flat and solid in the trenches. All rough corners and sharp bends are to be avoided as far as possible. No bolts for joining troughs are to be longer than is absolutely necessary. A bridge must always be placed at the junction of troughs. The troughs are to be prepared for the cables with bitumen lining and bridges in as long lengths as possible. The cables are to be kept carefully dry, and are to be laid exactly parallel to the sides of the trough, and are not to touch the same at any point. The cable is to be fixed straight and free in its final position before any bitumen is put on. The latter is to be put on in small quantities at a time. In the event of four cables being laid in the same trough the bottom layer must be entirely completed before the top layer is begun.

The cost of the finished conduits is rather high, reaching in some instances to $15 per lineal yard, but falling in others to but little over $4 per lineal yard. The manual labor is, however, cheap, and the usual cost of digging the trenches varies from 42 to 60 cents per lineal yard in the sidewalks and from 42 to 64 cents in the roadway, night work commanding 20 per cent extra. This cost of labor includes the temporary relaying of the pavement, but the final relaying is done by corporation workmen, and the cost (estimated by the hour as such a fraction of a week's wages) is borne by the contractors, and to it is added cost of material, plus 10 per cent of all expenses for "plant and establishment."

To show the enormous demand which the mains are called upon to supply (per lamp) during the dark, foggy days of winter and the insignificant amount of energy conveyed during June and July, there is appended a table giving in volt-ampère hours the current supplied to each lamp during each

month of the year, estimated, of course, from the total current supplied and the total number of lamps:

Month.	Current.	Month.	Current.
January	6,300	July	1,500
February	4,800	August	1,600
March	3,600	September	2,100
April	2,700	October	4,100
May	1,800	November	5,200
June	1,200	December	6,000

J. C. SHERMAN,
Deputy Consul.

UNITED STATES CONSULATE,
Liverpool, August 31, 1891.

CANADA.

MONTREAL.

REPORT BY CONSUL-GENERAL KNAPP.

There are no underground conduits in use in the city of Montreal for telephone, telegraph, or electric-light purposes.

I may add, however, that permission has been given by the city council to the Bell Telephone Company to place conduits under St. Catherine street, in this city. Work on the same has been commenced, but is not completed to the extent that a valuable report regarding the same can be made.

CHAS. L. KNAPP,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Montreal, July 31, 1891.

QUEBEC.

REPORT BY CONSUL RYDER.

There are no underground conduits for telephone, telegraph, or electric-light wires or electric cables in this district. There is little probability of there ever being such a thing; in fact, it is next to an impossibility, on account of the rocky formation of this locality.

It was such an expensive undertaking to place the water pipes below the frost line that it will be many years before the city can be relieved of the burdensome debt thus incurred. The entire excavations, about 8 miles in length, were blasted out of solid rock.

FREDERICK M. RYDER,
Consul.

UNITED STATES CONSULATE,
Quebec, July 27, 1891.

EGYPT.

REPORT BY CONSUL-GENERAL ANDERSON, OF CAIRO.

I have the honor to state that there are no underground conduits in Egypt, so far as I can ascertain. All of the various wires are overhead, and, to the best of my knowledge, no electric-power cables are in use.

JNO. A. ANDERSON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Cairo, September 11, 1891.

BRITISH INDIA.

REPORT BY CONSUL-GENERAL MERRILL, OF CALCUTTA.

There are no underground conduits for telegraph or telephone wires in the cities adjacent to the Bay of Bengal.

Subterranean systems for such work in this country are at present in their experimental stage, but little need as yet having been felt for such methods.

Electric-light wires and electric-power installations can scarcely be said to exist, as even for lighting the use of electricity can only be spoken of as being in an incipient state.

In India the power used for mechanical purposes is man, bullock, water, air, and steam.

SAMUEL MERRILL,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Calcutta, August 3, 1891.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

No. 139.—APRIL, 1892.

LOCAL TRANSPORTATION AND UNDERGROUND CONDUITS.

ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE.
ALL REQUESTS FOR THESE REPORTS SHOULD BE ADDRESSED TO THE SECRETARY OF STATE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.